

ON
THE EPIDEMIC CHOLERA,
AND OTHER PREVALENT DISEASES
OF
INDIA.

BY
SAMUEL DICKSON,
ASSISTANT SURGEON, THE ROYALS, LATELY ON THE
MADRAS ESTABLISHMENT.

“ La science qui instruit, et la médecine qui guérit, sont fort bonnes sans doute ; mais la science qui trompe, et la médecine qui tue, sont mauvaises : apprenez-nous donc à les distinguer.” — ROUSSEAU.

JOHN ANDERSON, JUN. 55. NORTH BRIDGE-STREET, EDINBURGH,
AND
SOLD BY SIMPKIN AND MARSHALL, LONDON.

MDCCCXXXII.

Printed by Walker and Greig, Edinburgh.

R35873

TO

SIR JAMES M'GRIGOR, BART. F.R.S.

DIRECTOR-GENERAL OF THE ARMY MEDICAL DEPARTMENT,

&c. &c. &c.

SIR,

WITH the discordant doctrines entertained by the Profession upon some of the Disorders which have engaged my pen, you are sufficiently conversant. The opinions maintained in the following Work have, in particular instances, some claim to novelty. They have not, however, been taken up precipitately,—they are the result of five years' observation and reflection.

I know not one who could better determine their value than yourself; nor could I with equal propriety inscribe to any other a Work on the Diseases of the British Soldier, who has so often experienced the benefit of your excellent Hospital administration.

In dedicating these pages to you, I feel I have performed a duty which I owed alike to your high situation, and the ability with which you have so long filled it.—I have the honour to be,

SIR,

Your obliged and obedient humble servant,

S. DICKSON.

PREFACE.

THE nature and treatment of the more ordinary forms of disease to which the European is liable in India, have already employed the time and talents of observing men. Clark, Johnson, and Ballingall, have written their respective treatises ; and Mr Annesley more recently has favoured us with his opinions and practice in this field, derived from the experience of a quarter of a century. The present little Work perhaps might, under these circumstances, seem scarcely called for. Its author, however, having found little or no information in the works of his predecessors upon the great Epidemic of India, and having observed many discrepancies in their practice and opinions on important points in other diseases, was naturally led, after giving a trial to their various

modes of treatment, to think and act for himself: “ nullius addictus in verba magistri jurare.” He has presumed to differ with them in his theory and practice in several instances—with what reason the reader will be best able to judge after the perusal of his pages.

The first disease upon which he shall enter is the epidemic Cholera, that has ravaged, and still ravages India. Being one of the most rapidly fatal diseases that can affect humanity, and appearing in the most opposite forms, he considers, that a proper knowledge of it will enable the physician to explain the symptoms of many other disorders which have been long deemed inexplicable. In this opinion he is not singular; Mr Orton, whose researches into the nature of this disease do him honour, having expressed a similar sentiment. The occurrence of the various symptoms, and the reconciling these with *post mortem* appearances, are here explained, so far as he is aware, in a manner peculiarly his own. He flatters himself, that the more his reader understands of Physiology, the more readily will he accord with his views. In making the study of the functions of the different organs of the body in health the ground-work of his obser-

vations upon their diseased state, he has necessarily devoted some attention to the nervous system; a system which it is too much the fashion of the day either to slur over in vague remark, or totally to overlook, as having little or no share in the production of disease. In the following pages, the nerves and nervous influence will receive the same attention as the generality of writers exclusively devote to the circulating system; nor shall this system be passed over in silence. How much each depends upon the other, the powers which they mutually supply, and how they influence particular organs and functions, it shall be his business to endeavour to point out. Before we attempt to reason on the changes that take place in disease, we must be acquainted with all this; for whatever talents the practitioner may possess, however great his zeal in observing and noting morbid action, he cannot advance one step in pathology, if his previous knowledge of physiology be defective. To use the words of an eminent writer,* “Without this philosophical

* John Bell.

“ view of the parts and functions of the living
“ body, practice is not experience, and grey hairs
“ and length of years bespeak only stubbornness
“ in prejudice, and ill-founded claims of defe-
“ rence and respect.” .

ERRATUM.

In a few copies, p. 24. *for Dr Denman, read Dr Denmark.*

ON

CHOLERA.

THE nature of CHOLERA is still a question in India. Those who confine their observations to the *post mortem* changes which the brain exhibits on dissection, suppose the disorder to consist in a peculiar inflammation of that organ ; others, in the vascular state of the stomach and bowels, recognize gastro-enterite as the origin of every symptom and change : Not a few imagine the liver to be the chief seat of mischief, from the congestion it in general betrays ; while the state of the bile, its presence or absence in the alimentary canal, has each in its turn been stigmatized as the immediate cause of the disease. There are not wanting some, however, who believe, that

the *post mortem* appearances, which their brethren look upon as causes, are in reality the mere effects of nervous derangement ; forming their opinion on the rapid succession of the symptoms in life, however difficult they find it to connect them with the discoveries made after death by the scalpel.

From this discrepancy of opinion on the very nature of the disorder, is it wonderful that the practice should be equally unsettled ? Bleeding, blistering, and leeching, in rapid succession, if not simultaneously, have been had recourse to by those who ascribe to the disease an inflammatory origin. Emetics and purgatives, with calomel *usque ad nauseam*, have been held forth as the sheet-anchor by all who look upon the state of the liver or the bile as its proximate cause ; while the absence of this secretion in the ejected matters, has furnished an apology to others to prescribe the bile of the ox, and, having prescribed it, they have not failed to extol its virtues in the disorder !—Those who see in Cholera a rapid exhaustion of the powers of life, naturally turn with contempt from such modes of treatment. We shall endeavour, in the sequel, to form a proper appreciation of the cordial reme-

dies to which these last, perhaps too exclusively, resort.

The correctness of the present designation of the disease has been disputed. This point we do not mean to discuss : It is more desirable to ascertain what the symptoms are by which we characterize this fatal disorder, and how far these differ, in their essentials, from another disease which may have received the same denomination. An individual with full bounding pulse and hot skin, is in a different state from one labouring under dyspnœa, pallid withal, and pulseless, though there should be present in both a multitude of other symptoms perfectly identical. Both of these states having been produced by the same epidemic influence, receive the same name ; but they have this difference, that the dyspnœa of the one makes the very danger from which the other, which enjoys an immunity from this symptom, is free.

We shall first consider that form of the disease which, from the early difficulty of breathing, has been denominated Cholera Asphyxia.

Mr Orton has well described the symptoms :—
“ An extraordinary depression of spirits and general uneasiness come on, attended by tremor

" and sense of debility, giddiness and headach ;
" and occasionally ringing in the ears is also
" felt, particularly on rising from the recum-
" bent position, or making any sudden move-
" ment : pains resembling those which attend the
" accession of fever, are frequently felt in the
" limbs. The bowels are griped occasionally,
" and natural loose stools occur. Nausea comes
" on. The circulation and temperature of the
" body are variously disturbed ; but most com-
" monly the pulse is accelerated and weakened.
" The skin is moist, and colder than usual to the
" hand of another. In general, however, the
" severer affections quickly set in. Acute griping
" is felt in the bowels, the stools become ex-
" tremely frequent and watery, and change to a
" greyish-white colour, so as exactly to resemble
" the congee or barley-water. Vomiting comes
" on ; and, after the common contents of the
" stomach, a clear watery fluid, interspersed with
" flakes of mucus, is discharged. Copious sweat
" breaks out, and the anxiety and debility rapid-
" ly increase. The countenance assumes a very
" peculiar appearance, by which alone the disease
" may generally be distinguished. This is so re-
" markable, as occasionally to render servants

“ recognized with difficulty by their masters, even
“ in the early stages of the disease. It is usually
“ during a fit of vomiting that spasms of the mus-
“ cles are first felt. They affect occasionally the
“ whole of the muscles of voluntary motion, but
“ particularly those of the legs and feet. The
“ respiration, from the first accession, is observed
“ to be hurried and oppressed, and is frequently
“ complained of. As the disease increases in
“ violence, the colour of the whole surface changes
“ to a livid hue, particularly round the eyes and
“ at the extremities. The surface is bathed in
“ cold sweats; the hands and feet, and afterwards
“ the whole body, rapidly grow cold.”—“ From
“ the first setting in of the disease an extreme
“ thirst invariably attends; and, notwithstanding
“ the coldness of the body, there is an ar-
“ dent longing for great quantities of cold water,
“ which, however, though gratefully and eager-
“ ly received, frequently affords no relief to
“ the morbid sensation.”—“ Great oppression
“ and sense of anxiety are also referred to the
“ præcordia. The urine, when it does appear
“ in the early stage, is pale and watery; but,
“ under the existence of the severer symptoms,
“ that secretion, as well as that of bile, is com-

“ pletely suppressed. The tongue is natural at
“ first, but in the course of the disease it be-
“ comes furred and deficient of moisture; and
“ dryness of the mouth and throat is very gene-
“ rally complained of. The hands are sodden
“ with cold sweats, shrivelled and wrinkled like
“ those of a washer-woman after a day's labour,
“ and frequently of a dark blue colour. There
“ is an extreme restlessness and anxiety, which
“ prevent his remaining an instant in the same
“ position.”—“ It is gradually relieved or removed
“ by stupor; and though these symptoms are of
“ so opposite a nature, they are frequently pre-
“ sent in a very considerable degree at the same
“ time. After an uncertain continuance of this
“ state, to which I cannot with truth apply a
“ term of greater precision than a few hours, a re-
“ markable change takes place.”—“ The spasms,
“ the vomiting, and purging, usually cease about
“ the same time; whatever is taken into the sto-
“ mach is retained, even in large quantity, and
“ clysters not rejected as formerly.”—“ The
“ powers of life continue rapidly to fail. The
“ pulse becomes quite lost at the wrist, and even
“ at the humerus. The pulsation of the heart
“ itself is felt extremely feeble. The eye is sunk

“ back, and fixed in the socket ; the cornea be-
“ comes dull and glassy.”—“ In the attempts to
“ sleep, the eye is half open occasionally, the
“ pupil is scarcely covered ; deafness, preceded
“ or accompanied by tinnitus aurium, is very com-
“ mon in this stage ; false vision, blindness, and
“ dilated pupil, are equally so ; speech becomes
“ difficult, and the voice grows hoarse, hollow,
“ and scarcely intelligible, or entirely lost. The
“ breath has been observed to be cold, as if it
“ came out of a lump of clay.”*

While I have selected from Mr Orton such passages only of his description as tally with my own experience, (by no means limited), I have left out one or two describing symptoms, which I am inclined to look upon as dubious. He mentions, for example, pain of belly increased by pressure. I have never met with any pain of this kind which might not be fairly ascribed to spasm, vitiated sensation, or flatus ; and such I must therefore consider the particular pain to which he alludes.

We have given, then, the general features of the disease : many of these, however, are in indi-

* See Orton on the Epidemic Cholera of India.

vidual cases altogether wanting. The absence of bile in the ejected fluids is a common symptom; but I have known this secretion continue to the last. The congee-like appearance of the ejections, then, is not an essential symptom; and, from its being often observed in that form of cholera in which there is no dyspnœa, and little danger, it would appear to be one of trifling importance in the treatment. In both forms of the disorder, spasm has been observed to be as often present as wanting. I have seen many cases of the disease, in which neither spasm, vomiting, nor purging, were symptoms. The sinking and dyspnœa were sufficiently characteristic of cholera asphyxia.—These last, then, are the essentials of this disease.

Those who have witnessed many cases of hæmorrhage, will be struck with the identity of the symptoms of this epidemic disorder and those of persons bleeding away from life. “When a “woman is tapped,” says Dr Blundell, “she may “also sink in a few days from symptoms of ex-“haustion,—symptoms very similar to those arising from flooding or cholera morbus.”

Mr John Bell, when treating of loss of blood, says, “The countenance assumes, as in asphyxia, “a livid hue from want of circulation; the face

“ becomes all at once deadly pale, the circle
“ round the eyes is livid, the lips are black, and
“ the extremities are cold. The patient revives,
“ and faints again ; with a low and quivering pulse
“ he is sick, and his voice is lost. The counte-
“ nance is not of a transparent paleness, but of
“ that clayey and leaden colour which the pain-
“ ter represents in assassinations and battles.”

Dr Blundell describes the effects of loss of blood in the following words :—“ And first, then, “ we may observe, when blood comes away in “ large quantities from the uterus, alarming symp- “ toms soon begin to appear : the tongue, lips, “ and cheek, become pale and ghastly ; the pulse “ frequent, (140, 150, or 160), small, and perhaps “ intermittent, disappearing in the wrist for a few “ seconds, or even for a few minutes, nay for an “ hour or more, and then returning ; and there “ is weariness and weight in the limbs, and faint- “ ing, and sighing, and vomiting. Now all these “ symptoms you may throw together, under the “ head of symptoms alarming in a high degree, “ but which are not to be looked upon as indica- “ tions of immediate and almost certain dissolu- “ tion. When the patient is about to die in conse- “ quence of the blood she has lost, in addition to

“ the preceding symptoms, which may have been
“ precursory, the following also frequently occur :
“ —The whole body becomes damp and chilly, the
“ very breath becoming cool, as you may feel
“ sometimes by putting the back of the hand a little
“ before the mouth—and the pulse intermits very
“ much, or perhaps it is permanently imperceptible
“ in the wrist ; which it may be for minutes, ay, for
“ half an hour, an hour, or even longer than this,
“ before the dissolution takes place ; and soon the
“ patient becomes restless, and wishes to alter her
“ position ; and no persuasions induce her to be
“ quiet—relief flies before her—she changes her
“ position, and again she changes, but remains
“ uneasy still ; and now the irritability and ex-
“ haustive oppression continually augmenting, she
“ gets at last into a state of involuntary jactita-
“ tion, throwing her limbs about on the bed ; and
“ these are speedily followed by a cessation of
“ the cardiac and pulmonary actions.”

The spasms which are so frequently met with in cholera, are among the occasional symptoms of loss of blood. I have witnessed them in two instances ; the one a case of epistaxis from a blow, and the other a female, whose natural irritability of constitution was increased by the loss of a few ounces

of blood after a premature labour. This woman, moreover, had complete suppression of urine; and she complained of blindness before death. In both cases, a craving thirst was a prominent symptom. In my own practice, I have observed purging as a symptom of loss of blood; and, in experiments upon dogs, I have often seen watery dejections produced by bleeding.

We shall now advert to the appearances which have been observed on dissection of the bodies of persons who have died of cholera. These have been, pretty uniformly, a general fulness of the internal veins, particularly of the head and intestines; water has been observed in all the ventricles of the brain. The lungs have been much collapsed, or they have been gorged with blood, and the air cells contained frothy sputa: in either case they contained little air, and suffered no further collapse upon opening the chest. The right side of the heart has been generally engorged; and blood, when found in the left side or in the arterial system, has been for the most part fluid, and very dark. The gall-bladder, sometimes gorged with bile, has occasionally been found almost empty, its ducts for the most part impervious by spasm. The small intestines have

been tumid with flatus ; and the great gut, which seldom contained any feces, has been more or less contracted. The urinary bladder generally empty, though sometimes full of pale urine.

We shall not include among the morbid appearances the mucus which is “ habitually attached to the intestine,”* although Mr Annesley, in his work upon the disease, dwells upon it at some length, and points out a method of getting rid of it as something peculiarly noxious : Nor shall we describe as inflammation of the stomach and bowels, that high vascularity of their mucous membrane, a state which may be observed on inspecting the bodies of all who pass rapidly from health to death—in those who have been drowned or strangled, for example.

On the *post mortem* examination of animals slowly bled to death, we find a similar congestion of the internal veins, and indeed a general agreement in the appearances detailed.

“ All the larger veins of the legs were opened
“ in a small dog. At first the pulse was accelerated
“ —soon after it became slow and languid. The

* See Majendie’s Physiology.

“ heart’s motions, though feeble, were never irregular ; and indeed, long before death, they could neither be seen nor felt. Borborygmi were early heard, and lasted a long time. The breathing at first was hurried ; soon it became slow and laborious, and at last convulsive. The pupils were frequently examined : they became gradually less and less obedient to the influence of light, and at length ceased to contract altogether. Slight spasmotic contractions took place, first in the femoral and abdominal muscles ; then the head, neck, and fore-legs, were likewise powerfully affected with spasms.

“ At this time a deep sleep seized the animal : he breathed slowly and with difficulty, and, for a little time before death, respiration at intervals was suspended altogether. Whenever the breathing was strong and quick, the pupils recovered their tone, and the blood was more strongly propelled. In an hour death closed the scene.

“ The dissection of the head was first begun. The membranes of the brain were loaded with turgid vessels, the larger of which were of a very dark colour. A bright red spot was observed near the cornua, where some degree of

“ sanguineous effusion had taken place. The
“ sinuses were full of blood. In all the ven-
“ tricles there was more or less water effused :
“ the base of the brain, and the eighth and ninth
“ pairs of nerves, were inundated with water. A
“ net-work of red vessels was spread round their
“ origins, and the optics were in the same state.
“ In the cervical and lumbar regions of the spinal
“ marrow there was a considerable degree of red-
“ ness. The right side of the heart was full of
“ blood ; the left auricle contained a little. Some
“ blood was found in the large veins, and a few
“ clots in the thoracic aorta.

“ The stomach, and all the intestines, were
“ tumid with flatus ; the veins of the mesentery
“ were turgid. The turgid state of the veins
“ of the head was very remarkable : indeed,
“ throughout the whole body the veins were
“ tumid.” In another experiment, “ the right
“ side of the heart contained a good deal of
“ fluid blood ; the rectum and urinary bladder
“ were found contracted and rugous.” *

* Dr Seeds on the Effects of Loss of Blood.—*Medical Gazette*, 2d January 1830.

The collapsed state of the lungs, so constantly observed after death from cholera, is also very remarkable in animals that have been bled to death. Indeed, both the phenomena in life and the *post mortem* appearances would seem to be identical. Inflammatory appearances have been occasionally observed in those who have died of the disease; but these, from their infrequency, we may infer have been merely accidental, and are not at all essential to the pathology of the disorder.

From excessive terror we have nearly the same symptoms;—and here I may particularly refer to a disorder from this cause, which came under my own observation. In the outward voyage to India we experienced a severe hurricane, soon after doubling the Cape. The howling of the wind, the creaking of the masts and the cordage, the dash of the sea over the deck, and the occasional flashes of lightning, were terrific. The passengers were all in a state of great alarm; and thirteen of a pack of thirty dogs which we had on board, were attacked the day after with spasms, sinking, and vomiting. They all died in a few hours. In this instance the disease might be fairly attributed to terror.

Cholera asphyxia may be the effect of any cause acting upon the brain, so as to draw off, by shock or otherwise, its attention from the various nerves of the body, but more particularly from those necessary to the function of respiration. And here we may observe, that according to the system of nerves that shall be most deprived of the cerebro-spinal influence, will the symptoms of the patient vary ; in one being mild and tractable, in another passing rapidly from life to death, or simulating numerous other nervous diseases—such as lock-jaw, epilepsy, apoplexy, and delirium,—puzzling the physician alike for a denomination and a remedy. Nor is this difference in the symptoms of cases of cholera to be wondered at, any more than that any other debilitating cause should produce diseases varying in name and nature. “Loss of blood,” says Mr John Hunter, “will bring on all kinds of constitutional complaints, in consequence of weakness being produced—either immediate, as fainting, or secondary, as in dropsies, as well as nervous affections; the lock-jaw for example.” And Broussais mentions “convulsions, and even fevers,” as arising from the same cause. Now, if these diseases are so designated by such authors, without

the least regard to the producing cause, shall we hesitate to name the congregated symptoms, vomiting, sinking, dyspnœa, and spasm, when proceeding from hæmorrhage, by the word *Cholera*?

There is not a constitutional disease which has found a name in nosology, (I except certain ex-anthemata), the symptoms of which may not be induced by sympathy, as it is called, or, as Mr Abernethy has better expressed it, in “a reflected manner,” by local injury. Every surgeon of experience has occasionally seen syncope, ague, fever, &c. from passing a bougie into the urethra. That this very cause will produce cholera asphyxia,—call it what you will, the disease has every essential symptom of the epidemic,—the following case is an evidence:—

“Mr L——, about 27 years of age, had a
“bougie passed at two P.M. on Tuesday the 6th
“of September. At six o’clock in the evening
“a sense of coldness and slight nausea came on,
“but did not amount to actual faintness. He
“took a dose of salts of his own accord, which
“acted on his bowels, and produced vomiting;
“but he passed an uncomfortable night. All
“day on Wednesday the patient was ill, but
“was not seen by any medical man. On Thurs-

" day morning Mr Thomas was called to him,
" who found him in a very strange condition.
" No pulse could be felt, the extremities were
" cold, the fingers blue, the breathing short and
" very laborious; yet the patient was sensible,
" though somewhat deaf, and confused in his
" ideas. Some diffusible stimuli were exhibited;
" and on Thursday night, at ten o'clock, the
" writer of this article joined Mr Thomas in con-
sultation. A very particular examination was
" now made of the arterial system. A weak flut-
tering and indistinct movement was felt in the
" region of the heart, when the patient lay over
" on that side. The *chest sounded badly* in every
" part. *No respiratory murmur could be heard*
" through the stethoscope; * but the situation was
" unfavourable for auscultation, being in one of
" the most noisy streets of the metropolis. No
" pulsation could be felt in the descending aorta,
" the inguinal, carotids, radials, or, in short, in
" any artery of the body. The examination was
" repeatedly made, and with the utmost care.

* In this instance, collapse of the lungs could not be better shewn than by this means.

" The patient was sensible, but restless, and complained of an indescribable oppression and sense of anxiety in his chest. He was thirsty, the tongue dry and furred, the countenance clouded, the extremities cold and pale, the nails blue, the breathing very short and somewhat laborious. Bottles of hot water were applied to the extremities, and diffusible stimuli of the most powerful kinds were exhibited internally, though with some difficulty, as the stomach was irritable.* In this condition he remained the whole of Thursday night, and was found on Friday morning exhibiting precisely the same phenomena. The stimulation, with frictions, fomentation, &c. &c. were continued. At five p. m. the medical attendants again met, but not the slightest mark of arterial action could be felt in any tangible artery. He had not slept any in the night or during the day. The tongue was more loaded ; there was some intellectual aberration, and the muscular debility was extreme. He could hardly turn himself in bed, and when his head was raised he was threatened

* In other words, he had vomiting.

" with syncope. A stimulating salt-water bath
" was ordered at ten o'clock at night, and in
" the mean time the stimulation was continued.
" This day he took twenty grains of calomel with
" compound extract of colocynth, and the bowels
" were well cleared. At half-past ten at night,
" while preparing to place the patient in a warm
" bath, a slight pulsatory motion could be felt in
" the carotids ; and shortly afterwards, while in
" the bath, the radial arteries began to pulsate,
" though very feebly. From this time a gradual
" and almost imperceptible improvement took
" place in the arterial action and animal tempera-
" ture, till both were completely developed. The
" freedom of breathing corresponded in the im-
" provement of the function of the circulation,
" and, in two days from the appearance of arte-
" rial pulsation, a smart febrile reaction was set
" up, which required moderate depletion." * An
eruptive disease of the skin followed, and yielded
to simple means.

That the epidemic of India is caused by a pecu-
liar influence, (whether of earth or air we shall not

* Chirurgical Review, New Series, No. viii. p. 102.

now stop to inquire), directly, in the first instance, affecting the brain and nerves, will, we trust, be admitted by every candid reader. This affection, we shall endeavour to shew, is a diminution of the influence of these over the various organs of the body, similar to what takes place from the bite of the cobra, or the introduction of a solution of tartar emetic or arsenic into the veins. In the dog I have produced every symptom of cholera by these means.

Before we endeavour to explain the rapid succession of the symptoms which principally characterize the fatal form of the epidemic disease, we may premise, that the evidence of diminished nervous influence in a part, whether muscle or viscus, is, according to the degree of that diminution, a languor in the performance, or a morbid increase of its action or function. The complete absence of nervous influence is marked by loss of the power of action.

These propositions I consider as demonstrated,

1. Because the interruption of the cerebro-spinal influence, by pressure on the motor nerve of a muscle, causes tremor, spasm, weariness, or palsy, according to the degree. The same pres-

sure applied to a glandular nerve, increases, diminishes, or prevents secretion.

2. Palsy is often preceded either by morbid increase or diminution of function ;—amaurosis, by false or double vision ;—loss of hearing, by ringing in the ears, or partial deafness ;—loss of feeling, by tingling pains or numbness ;—idiocy, by hallucination, delirium, or stupor.

3. These diseases can all be produced by loss of blood—defective nutrition, whether as regards food or air—and by substances, the admission of which into the system in health prevents assimilation ; iodine and mercury, for example. Each and all of them have been witnessed during the course of the epidemic. May they not, then, on the fairest principles of induction, be ascribed to diminution of nervous influence over the different organs with which they are associated ?

That increase and cessation of function should both mark a state of decrease of nervous influence, might at first sight appear paradoxical ; but a little reflection will perhaps teach us to explain the fact.

Every organ of the body has a controlling, directing, acting, and combining power, derived from other organs. The cerebro-spinal class of

nerves, influenced by the arterial blood of the heart, confers these powers on the muscular system. Diminution in the *acting* power of a muscle is known by weariness or weight, and inability to move; tremor and spasm shew diminution and loss of the *controlling* power: the former, being merely a rapid succession of incomplete spasms, marks the possession of more of this power than the latter. Pain, numbness, and insensibility, are evidences of the diminution and loss of the directing power, *perception*. Complete palsy is the effect of the total absence of all these powers.

In the same manner we explain the disorders of the glandular system. Excess of secretion proves the absence of the controlling power; diminution and suppression, the diminished state or loss of the power of action; vitiation, the loss of the powers of combination and direction.

Morbid action, then, so far from being the effect of increased nervous energy, is in reality the symbol of its partial absence.

The rice-water appearance of the fluids ejected from the stomach and bowels, has been supposed to throw a mystery over the disease in question. Surely this is sufficiently explained by spasm of the gall-ducts preventing the admixture of bile.

In thirty cases which I myself examined after death, I could not force the bile through the gall-ducts by any pressure of my hand. That spasm of these ducts is often induced by grief, is an instance in proof that in this disease it is caused by cerebral irritation or shock. I have seen this same rice-like fluid vomited by a girl immediately after amputation of the thigh, her constitution having taken an alarm at so great an injury. In the course of the epidemic Mediterranean fever, the ejections of some of the sufferers, more especially those who had been largely depleted, precisely resembled the matters thrown up in cholera. In adverting to the case of Mr Boyd, the surgeon of the hospital, Dr Denmark says,—“ I “ was called to him in the middle of the night, “ and found him scarcely able to articulate, vomit- “ ing a turbid or whey-coloured fluid ; with ex- “ cessive anxiety, sobbing, and a pulse extremely “ weak ; cold clammy skin, and the features pale “ and shrunk.”* Now, as this could not be called a state of fever, under what other denomination could the symptoms come ? They could scarcely

* Medico-Chirurgical Transactions.

be called the symptoms of dissolution, for under the use of cordials this gentleman recovered. The disease was cholera asphyxia.

We shall not take up the time of the reader with the hypotheses of authors, nor attempt to shew the futility of the reasoning of those speculators who affirm, that vomiting and spasm in this disease are efforts of nature to get rid of something noxious from the system. These, as in hæmorrhagic cholera, are merely symptoms of a diminution of nervous influence over the respective organs with which they are associated.

We occasionally read of tonic spasm. Dr Mason Good has pointed out the absurdity of the term. If tone means health, it cannot surely apply to a state which is confessedly morbid. Spasm of the stomach and colon is the forerunner of paralysis of both these viscera in the epidemic disease. This is incontestably proved, by the most potent stimulants and irritants administered *per os et anum* being retained, and by pills, &c. being found after death completely unchanged in the whole track of the alimentary canal. The *gastric* branch of the eighth pair of nerves being proved to be palsied, can we doubt that the *respiratory* portion also is in the same state, when, by artificially para-

lyzing it, we have every essential symptom and change witnessed in those who have died of cholera?* "In general, (says Mr Mayo), when these nerves are divided about the middle of the neck, "respiration immediately becomes laboured, or "hurried and irregular, and the animal dies in "the space of a few hours. In a dog, in which "the par vagum was divided in the neck, the "animal survived three days. There was dysp- "nœa, with frequent vomiting, and the stomach "was found to have become inflamed."† Loss of voice, so frequent in cholera, is also an effect of this operation. Digestion in both cases ceases to be performed. In both, the arterial blood becomes gradually darker, and the subject grows cold. The lungs after death, from this operation, are found tumid, and partly gorged with blood, partly filled with a frothy sputa. They are in general much collapsed and engorged, and seldom or never suffer any further collapse on

* It is now more than two years since I published a pamphlet on this disease at Madras, in which I stated my belief that death took place from a palsy of the eighth pair of nerves.

† Mr Mayo has here mistaken congestion for inflammation. The same mistake has been committed by writers on Cholera.

opening the chest. The whole internal veins are loaded with very dark blood, and the right side of the heart is gorged with it. Mr Brodie found less carbonic acid evolved. Dr Davy particularly called the attention of his medical brethren to the same fact in cholera. Mr Brodie, after paralyzing these nerves, inflated the lungs, and restored the natural colour of the blood. I found that this could also be done in cholera ; for, immediately after a patient had ceased to breathe, I commenced the process of artificial respiration, and found, upon dissection, as I had anticipated, blood in the left ventricle and aorta of a scarlet colour.

The essential symptoms, then, and the *post mortem* appearances in both, are identical. Explain the one, and you require little to add in elucidation of the other.

In both cases the sensorial or voluntary powers remain almost to the last. It is by these that the pectoral, intercostal, and other external respiratory muscles act ; and you do therefore see them acting freely till a short time before death. How then does the fatal result in both instances take place from asphyxia ?—We shall consider the functions of the eighth pair of nerves.

The pneumogastric (or eighth pair of nerves) supplies, by its recurrent branch, certain muscles of the glottis and larynx necessary to respiration and voice: It sends branches to the lungs, the stomach, and heart. Through this nerve the functions of these organs are influenced by the brain.

The first diminution of the cerebral influence over the stomach produces spasmodic vomiting, to which a passive or palsied state succeeds, and no stimulants, however powerful, can again rouse it into action. Digestion is also interrupted; and we remark, that undigested meat is frequently seen in the ejections of the cholera patient.. The feeble or whispering voice observed in the disease shews, that the muscles necessary to that function are also paralyzed; and the sighing and anxiety at the præcordia prove that the respiratory process is interrupted. That this must be by a derangement of the *internal* muscles of respiration, is further proved by the external muscles being observed to act freely under the controul of the will. The sufferer raises his chest to its full height; but you see the abdomen become lank and depressed at the same moment, and you therefore know that the



lungs do not receive their proper supply of air.* The diaphragm ascends in proportion as the chest ascends, and the lungs are not expanded. There is an obstruction to breathing; and the following is the manner in which this is produced:—The dilating muscles of the glottis, which the pneumogastric nerves supply, becoming, like other muscles, wearied or paralyzed, cease to act. The lips of the glottis, having nothing to open them, meet in close approximation, and, when the patient endeavours to inspire, little or no air is admitted. Expiration, on the contrary, is performed with comparative facility; because the rush of the air outwards, assisted by the weight of the

* Mr Orton, whose book without exception is the best that has been written on the disease, has allowed this circumstance to escape his notice. He has also forgot, that upon dissection the lungs were collapsed, and contained little air. “ We have the evidence of our senses (he says) to convince us, that there is no deficiency in the quantity of the air taken into the lungs. On the contrary, we see the respiration hurried, which convinces us that an unusual quantity must be taken in.” The hurried respiration is an evidence of the attempt to take in air; but the depressed abdomen in life, and the collapse of the lungs observed after death, demonstrate that the effort is unsuccessful.

descending chest, expands the glottis, which opens like a valve, and the egress of the air is thus little impeded. It will be seen, that at every successive inspiration and expiration the quantity of air in the lungs must be lessened, *and that the lungs themselves must collapse and diminish in size.* They resemble more and more the lungs of the child that has never breathed, and sometimes sink like them, when placed in water after death. To preserve the child from asphyxia, there is a direct communication betwixt the right and left sides of the heart, by means of the foramen ovale. The sufferer in cholera having nothing of this kind, the blood must gradually accumulate in the right side, for the gradually collapsing lungs intercept the full flow of the blood. The pulmonary artery becomes more and more gorged with thick viscid blood, and the common secretion of the mucous membrane of the lungs, by the constant effort at inspiration, is worked up into the frothy sputa which dissection shews after death. Those who attribute the absence of pulse at the wrist to a cessation of the heart's action, are ninety-nine times out of a hundred in error. Could sufficient blood reach the left side of the heart, there would be no want of arterial

pulsation; but as the left side receives only a small quantity, it cannot by its most rapid contractions supply the extreme arteries. The external veins, receiving little or no blood, must be nearly empty; and this is the reason why, when a lancet is plunged into them at an advanced stage of the disorder, a few black drops only escape; for the atmospheric pressure forces on to the right side of the heart the whole contents of the external veins. However loaded the right side of the heart may be, this blood cannot retrograde into these veins, for the valves with which they are provided prevent this. The superfluity, therefore, will be found in the internal veins, which, having no valves, relieve to a certain extent the overloaded right heart. That the extremities are cold and livid, is owing to the blood which they contain never having come into contact with the atmospheric air. In pueri cerulei, the greater part of whose blood passes through the open foramen ovale, the extremities are cold and blue, but they are not shrivelled as in cholera, for they are sufficiently supplied with blood, though that blood, from its unoxydized state, is unable to maintain nervous influence sufficient for the generation of heat.

The whole symptoms of cholera asphyxia are expressive of diminished nervous influence; and the internal congestion, so often looked upon as the proximate cause, is simply the effect of collapse of the lungs. Bichat produced enormous congestion of the lungs, liver, spleen, &c. by strangling animals slowly; and the experiments of Professor Coleman demonstrate, that the whole air of the lungs is nearly exhausted in animals so destroyed. Collapse of the lungs, visceral congestion, and a dark and uncoagulable state of the blood, are common to both the cholera patient and the dog that has been killed by hanging.

It would be only wasting the time of the reader, to attempt a formal refutation of the various theories that ascribe the origin of the disorder to cephalitis, gastro-enteritis, hepatic congestion, &c. The authors of these have evidently mistaken the congestive effects of suffocation for primary local inflammation and congestion. Their reasoning being founded on false facts, their treatment necessarily partakes of the errors of their theories.

The thirst, so urgent in cholera, is merely a symptom of difficult respiration. Wherever the brain loses its perfect controul over the lungs and

respiratory muscles, we find this burning thirst. It is present in the passions of grief and terror, where also the sighing and anxiety shew the inability to breathe freely. It is the death thirst of the wounded in a field of battle, and of all who have lost much blood. As this thirst is, for the most part, an early symptom of the disease, the patient, if on a march, from its urgency, seeks to assuage it at the first ditch or tank he comes to. His friends, in such instances, not unnaturally ascribe his disorder to some noxious principle in the water. Though we cannot accord with their views in this respect, it must not be denied, that men, when heated on a march, from drinking cold water alone are sometimes seized with every symptom of the disease.

The restlessness which we remark in the epidemic malady, is common, like thirst, to every disease where the respiratory process is impeded. Take the symptoms of a person whose lungs have collapsed from an artificial cause—the effusion of blood into the thorax for example; and this restlessness, in common with some other symptoms of cholera, cannot fail to strike the reader. “ You will find him,” says Mr John Bell, “ with bloody foam at his mouth; his face pale in the cheeks,

" and livid round the lips and eyes ; heaving the
" breast with intolerable anguish, tossing from
" side to side in bed ; the bloody foam increasing,
" the breathing becoming more difficult, and the
" blood and air rattling in the throat ; then the
" pulse flutters, and the extremities constantly
" grow colder, till, struggling in something like a
" convulsion, he expires."

The cold sweats are expressive of the complete want of tone of the cuticular apparatus, and mark, with the small quick pulse, a state of extreme prostration.

Cholera, then, is the same disease which Mr Travers describes under the name of *constitutional irritation*; that is, the same nerves are placed in a similar state, as is proved by the symptoms. Fever, whether idiopathic, traumatic, or hæmorrhagic, is still fever. So is cholera ; and I know no difference in its important symptoms from those of certain constitutional disorders arising from wounds, burns, or loss of blood. Dr Marshall Hall has alluded to the analogy betwixt the effects of artificial paralysis of the par vagum and the symptoms of hæmorrhage. I confess it was with no small pleasure I found myself anticipated, in this instance, by a physiologist of his acknow-

ledged talent. Having shewn how precisely alike the symptoms of the epidemic are to those from loss of blood, the nature of the manner of death in both, being in a large majority of instances a palsy of the par vagum, would appear to be indisputable.

Objections may be urged, that the different symptoms of cholera remarked on the division of the eighth pair of nerves, are not present in every case of the disease. The simple answer to this is, the brain in cholera does not always lose its controul over the same nerves. Moreover, its diminution of influence is often confined to a portion or division of the eighth pair. The par vagum is not a simple chord ; it is a combination of many fibrils, having each its separate function. In one case of the epidemic we may have, for example, vomiting with loss of voice, but without any symptom of difficult respiration. Here the gastric and vocal fibrils are paralyzed, while the pulmonic portion still possesses the cerebral influence. The patient in this case will perhaps have full quick pulse, with hot skin ; his arterial blood will be red ; and if a vein be opened, the blood will flow *per salutem*. Let the brain in addition lose its influence

over the pulmonic portion of this nerve, how different will be the state of the sufferer!

In the former case, the patient will have little to complain of. The loss of voice is inconvenient, the vomiting is troublesome; but he can breathe freely, and he has perhaps little or no thirst. In the latter, the respiration is hurried; the pulse is quick, small, and almost imperceptible; the thirst insupportable; and the whole appearance that of a dying man. Such, then, is the wide difference betwixt cholera mitior and cholera asphyxia. Vomiting, purging, and spasm of the muscles of locomotion, may be objects of attention in the one;—occurring in the other, they cease to be symptoms of importance. Here the state of the respiration claims all our care.

It has been remarked by almost every practitioner, that the proportion of recoveries is infinitely greater among females than males. The physiological principles upon which this may be explained, afford an additional proof, that in this epidemic the great proportion of deaths takes place from a palsy of the dilating muscles of the glottis. In the female, these muscles are shorter than in the male; the lips of the glottis do not therefore approximate so much: the voice is con-

sequently less grave, and she can, for the most part, remain longer in a state of collapse—she can sustain imperfect respiration for a greater period. I have known a woman remain in this state for five days, and recover.*

But there are yet other modes in which death may take place from the same epidemic influence, according to the particular respiratory muscles in which the loss of nervous influence may most prevail; and this will account, not only for the occasional variation of some of the symptoms, but also for a difference of appearance on *post mortem* examination.

Spasm of the constricting muscles of the throat will produce a rapid asphyxia; and the appearances, both before and after death, will be nearly the same as we witness in criminals who have been hanged.

When the debility is greatest in the pectoral and intercostal muscles, the patient appears to breathe softly, and seems to sleep; but when rous-

* A bitch, whose par vagum I divided on both sides, lived a fortnight. I have never found the dog survive the fourth day.

ed, he will complain of great weight, and will change his posture again and again. These muscles are in health influenced by the will : when the sensorium is affected in this disease, the will does not stimulate them to action. The appearances on dissection do not differ much, so far as the lungs are concerned, from what we witness in the subjects of lingering disease.

Cramp of the diaphragm is a more rare symptom of the epidemic. A continuance of spasm in this situation very soon terminates life ; and the pain is excruciating. Dissection in this case exhibits much the same appearances as in that form last noticed.

I have seen cases terminate fatally from cramp of the heart.

The following appears to be a case of cramp of the left, and paralysis of the right, side of the heart :—

Camp, Chitpett, 8th June 1830.—Aspberry, a corporal H. M. 41st Foot, on route from Arnee to Trichinopoly, near the termination of this morning's march was observed to drink at a ditch, shortly after which he was brought up to the hospital tents in a state of delirium, with cramps of the muscles of the legs and toes, pallid

face, and imperceptible pulse. Frictions to the legs and arms, and the internal administration of diluted alcohol, brought back a gleam of reason ; and the skin, which before was cold, became warmer ; a feeble pulsation was also felt in the femoral artery. When asked if he had thirst, he answered 'No.' Delirium again soon returned ; the muscles of the throat could be observed in violent spasmodic action ; the breathing was almost interrupted ; the fingers were shrivelled and blue ; blindness and insensibility soon succeeded. From one eye there was a considerable lachrimation ; the other was quite dry. The pupils, at first contracted, became permanently dilated ; the corneæ were flaccid. Life was terminated in about two hours.

On dissection, the lungs suffered no collapse when the thorax was opened ; they were somewhat gorged. The right side of the heart was full of dark blood, which flowed into the cavity of the chest when the subclavian vein was accidentally cut, leaving the right auricle and ventricle in a flaccid state. The left side was closely contracted, and, when bisected, contained no blood, for which indeed there was not any cavity ; a fluid, recognized to be semen, oozed from the penis.

I was led from this case to reflect, what would be the consequence of spasm of the thoracic aorta below the giving off of the large arteries of the head. Would it not be a perfect apoplexy? When the epidemic raged in the 30th Foot, while under my charge at Wallajahbad, two fatal cases occurred in Europeans within two days of each other. I imagined at the time they might be connected with the epidemic influence: I am now strengthened in this opinion, for, knowing that the external spasms continually vary in their situation, we can analogically conceive them attacking internal parts in a similar manner; and such a spasm as that alluded to would certainly produce apoplexy. The case which we have just detailed, might by some be supposed to be one of coup de soleil; but when it is observed, that other two individuals were attacked with the more common symptoms on the same morning, and that on the preceding evening a female had the mild form of the disease, the reader will at once ascribe it to its true cause, the epidemic influence. In England, such a case would have been called simple apoplexy; the more especially, that neither vomiting nor purging were symptoms. The external veins in this case were nearly empty, and the pulse

absent. In the case of spasm of the aorta, the reverse would occur. The pulse would be full and bounding, and the external veins loaded. Does not this explain the nature of the two kinds of apoplexy, the practice in which, I need not say, should be completely at variance? Epilepsy, which has been also observed during the ravages of the epidemic, undoubtedly owes its origin to similar spasms. It is a disease which often terminates in apoplexy.

When the epidemic cholera first appeared in Bengal, its type varied little from the milder cholera of Europe. Instead of diminished, there was increased arterial action; the pulse was full and bounding, the skin hotter than natural; the bile, though sometimes absent, was for the most part secreted in large quantity; and there was much purging, with intestinal spasm. How different the patient's situation from one labouring under cholera asphyxia!

The danger of any disease is in the ratio which the nerves affected hold, in their importance, to the proper carrying on of the functions of life. Digestion may cease to be performed—the muscles of locomotion may be in a state of spasm and paralysis for days—the patient may have profuse vomiting and purging for a considerable period;

but while the respiration proceeds, and the pulse maintains the character of full and bounding, (which it could not do were the respiration materially interrupted), the patient is comparatively safe. In this form of cholera the respiratory muscles, external as well as internal, perform their office ; and the languor or lassitude, the spasm or paralysis of the rest, are of little immediate consequence ; yet to these symptoms, so secondary in importance, have the generality of practitioners prematurely directed their exclusive treatment, where the patient meanwhile was sinking from dyspnœa, which had no relation to them either as cause or effect.

The simple difference betwixt cholera asphyxia and cholera with fever is, that in the one the muscles of the glottis are paralyzed, while in the other they perform their natural function, and partake not in the derangement of those less necessary to the continuance of life. They are so far different diseases.

The analogy which subsists betwixt the symptoms of cholera asphyxia and those of ague, has not been unobserved by practitioners. When not fatal, cholera terminates for the most part in a hot and sweating stage. The muscular spasms of this

disease are analogous to the tremors of ague, which, as we have already shewn, are merely the effect of a less degree of debility. In both, we have for the most part nausea or vomiting. In ague we have sometimes the symptoms of purging. Oppression at the epigastrium, and coldness of the extremities, are common to both : A diminution of the cerebral influence over the pneumogastric nerves, differing only in degree, is the cause of the latter symptoms. The increased flow of pale urine, so often a symptom of ague, is sometimes present in cholera. In one instance of the latter disease, I have seen it come away involuntarily a short time before death. Suppression of urine, so common in the epidemic of the East, was a symptom of the Walcheren ague. When there is no reaction, death is preceded by similar stupor in both. You have ague, too, with hot skin and bounding pulse ; a state analogous to cholera mitior, or cholera without dyspnœa. Lastly, when ague has terminated life by a single paroxysm, dissection shews the same appearances as in cholera. Visceral disorder is sometimes the consequence of cholera, as of ague. Phrenitis, hepatitis, splenitis, dysentery, and dropsy, have been occasionally the *sequelæ*. Are not

these all produced by whatever lessens the cerebro-spinal influence,—by insolation, blood-letting, frequent debauch, poisons, passions, concussions of the head, &c.?

We have already anticipated some of the causes of sporadic cholera: can cholera be produced by inflammation? Having shewn, that even the simple irritation of the urethra by a bougie may, in a reflected manner, give origin to the worst form of the disease, we can readily believe that the inflammation of a vital organ can produce all its symptoms; and accordingly, in enteritis, gastritis, and some other inflammatory diseases, we see life terminated by a series of symptoms precisely identical. The symptoms which precede these, however, remove all obscurity as to their cause. That inflammation is not the cause of the epidemic cholera, is proved by the absence of pain, except such as may be referred to spasm, vitiated sensation, or flatus. Moreover, death has been known to be the immediate and instantaneous effect of the epidemic influence. The rapid recovery of the patients, when reaction takes place, could not occur, were the brain or any other important viscus changed in structure, or even partially inflamed.

The occasional evidences of inflammatory action in the intestines of those who have died of cholera, we have already said, may be looked upon as entirely accidental. In some instances, they have doubtless been produced by the treatment in life. The white viscid mucus which Mr Annesley dwells upon, in his book on the disease, is a mere increase of the natural mucus lining the intestine. May not this have been produced, in some measure, by the large quantities of calomel which form so prominent a feature in his practice? The question has been partly answered by himself. In his experiments with this medicine on healthy dogs, he found, that large doses of it produced an appearance precisely similar in the mucous membranes of the bowels of these animals.*

The epidemic of the Penitentiary is an instance in proof, how many diseases may owe their origin to the same cause. There, the united influence of confinement, impure air, defective food, and the depressing passions, produced diseases which the nosologists have most widely

* See his Treatise on the disease.

separated in their systems,—apoplexy, epilepsy, dysentery, cholera.

It was a favourite mode of punishment with the Indian Princes, to withhold from their prisoners, salt, and substances which contained it. The diseases consequent to this privation of a substance essential to the living solids and fluids, were identical with those of the ship-scurvy,*—ulcers, dysentery, fever, and cholera.

That, from similar causes, sporadic cases of cholera do frequently occur in India, more especially among the poorer natives, whose food is almost limited to rice, cannot admit of doubt. That the disease can be produced by worms, which, by their presence in the alimentary canal, give rise to an infinity of diseases, I have the evidence of my senses to believe, having witnessed children more particularly sink from this cause, with every essential symptom of the disease.

We have stated, that the soldier on a march, when heated, has occasionally, by the incautious

* The ship-scurvy does not proceed from the use of salt provisions, but from the want of vegetable food and fresh air; for exclusive diet, animal or vegetable, will give identical diseases.

use of cold water, been attacked with all the symptoms of the disease. To this cause I have often traced fever also, and dysentery.

We see these diseases daily produced by inebriety. From the same cause I am sure I have witnessed every symptom of cholera.

CASE 1.—Captain M——, generally of austere habits, drank deeply for two days, during one of the ravages of the epidemic. On the third he was seized with the symptoms of the disease, for which he was bled, and took calomel and opium, with occasional stimulants. He remained in a state of collapse all that day and night; the pulse now faint, now strong, raised and repressed hope accordingly. On the evening of the next day he vomited some matter like coffee grounds, became every hour more feeble, and sunk altogether about nine o'clock at night. The fluid ejected from the stomach and bowels, on the accession of the disease, was of the usual congee-like appearance.

CASE 2.—Lieut. B——, several years resident in India, a few months after my disembarkation at Madras sent for me in the morning to his quarters. He had been indulging in deep potations for many

days. He complained of mal-aise, for which I gave him some calomel and rhubarb. During the day he drank a good deal ; and about two o'clock P. M. his servant came to tell me his master was very ill. I hastened to him, and found him with his face livid, the external jugulars gorged with blood, and his whole appearance that of a person suffering from strangulation. He was sensible ; said he was like to choke, and that he had cramps of his limbs, and had vomited. I immediately opened a vein, but he died as the blood flowed ; which it did in a full dark stream. The substance which he vomited resembled coffee grounds.

On dissection, the blood flowed freely from the divided lungs. The liver was much gorged ; the stomach of a dirty purple colour, being injected with venous blood.* In this instance, I suppose

* This dirty purple appearance of the stomach and bowels has often been observed on dissection of persons who have died of cholera, and has been mistaken for gangrene. I remember having witnessed the same appearance, in the stomach and intestines of some horses that died of *croup*. The veterinary surgeon fancied that they died of abdominal mortification ; and as the disease was prevalent in his regiment, his treatment was chiefly the application of hot water blisters to

death to have taken place from spasm of the constricting muscles of the throat.

CASE 3.—I was suddenly called to Sergeant Ashby, who had been drinking for many days. The muscles of his lips and throat were in a tremulous state, his pupils contracted, his pulse bounding; he could not utter, though he appeared to be somewhat sensible. On opening a vein the blood flowed freely; but the pulse did not lose its strength until about fifty ounces were drawn, when it became less tumultuous, and the patient then, for the first time, recovered his speech. On inquiring, it was found he had suffered in the night from spasms; and he had vomited matter like curds of milk.

If we cast our eye over the history of epidemic diseases, how few have we traced to their origin! Had the eastern scourge confined itself to a small province only, we might have been led to ascribe it to some local cause of vitiation, or insufficiency of food or air; but when we have seen it simul-

the belly. He had the good sense, however, to blister the throat, when the true nature of the disease was explained to him.

taneously depopulating the immense Indian continent, and its isles ; stretching to Persia, and rapidly spreading even to the confines of Europe ; we are compelled to acknowledge, that neither of these could have been the constant cause of so general a disease. Mr Orton's researches prove, that earthquakes have been more frequent in India from the first appearance of the epidemic ; and to the same electrical changes which he believes produced these, he ascribes the origin of the disorder. My own observations will not allow me to believe, that these were mere coincidences. On two occasions an earthquake happened at Bangalore, and, among other intractable cases of disease, some of the various forms which the epidemic has been known to assume, were shortly afterwards admitted into the European and native hospitals of the stations. I have generally observed, that, when the disease was prevalent, the atmosphere was more than usually clouded ; and that a state of the air prevailed, which gave rise to uncomfortable feelings in every one. I have, however, seen sporadic cases of the disease in the most serene weather.

If, from my own experience, I might be permitted to state my opinion of the cause of the

epidemic, I should say, that certain states of the atmosphere, with which we are imperfectly acquainted, dispose the nervous system to a derangement from accidents, which at another period might be looked upon as trivial ; that at such a period, a glass of cold water, a transient passion, a slight debauch, fatigue, an uncomfortable increase or diminution of temperature, would at once give rise to every symptom. The great majority of cases have happened in the morning. May not this be owing partly to the variations of temperature before and after sunrise ? In the former case the native, in the latter the European, would be most likely to suffer. How much the passion of fear disposes to the disease, I have had many opportunities of observing. Besides the enzootic disease from terror, to which we have already alluded, I am positive I have seen persons with every symptom of cholera from a similar cause ; and I may instance females more particularly, among whom authors have remarked, that certain disorders, such as hysteria, epilepsy, chorea, &c. become absolutely epidemic from sympathy or horror. I have known the disease in the female commence with hysteria, take on the

form of cholera, slide into trismus, and finally end in death.

The knowledge of the first link in the chain of causation, can make little difference in the mode of treatment.

Let us not imagine, that a specialty of cause will throw a mystery over effects ; that the pale face of passion differs in essence from that produced by a poison ; or that syncope from a blow, is less a disease of prostration than the same disease occurring from loss of blood. “ The fevers, (says Mr Abernethy), produced by local disease, are the very identical fevers which physicians meet with when there is no external injury.” Are they not successfully combated by the same remedial means ? Or have we yet discovered, that lock-jaw from a viewless cause ought to be treated differently from that which we can trace to a local injury or a poison ?

In order the better to explain our views of the treatment of the disease in question, we shall direct attention briefly to the manner in which certain medicines act in other disorders incident to the human frame. By doing so, we shall anticipate much of the treatment of such as we intend to enter upon.

The nerves may be divided into two classes,—the cerebro-spinal or functional, and the ganglionic or assimilative.

The muscles of respiration being supplied by the cerebro-spinal system, this is more immediately necessary to life.

The ganglionic class would seem to be principally destined to the functions of secretion, absorption, and assimilation. It supplies the cerebro-spinal system with nerves to assist in their own reproduction, and that of the organs to which they are distributed; and it receives in return a portion of their influence, the better to perform its own functions.

The derangement, general or partial, of one or either of these classes of nerves, constitutes disease, the first link of which is irritation. Morbid irritation, by whatever caused, is only another name for direct or indirect debility. The former is produced by whatever diminishes the powers of the nerves, by abstracting or withholding from the circulating system the blood, or the substances which compose it; the latter, by whatever influences the nerves themselves, by some impression to which they have been unaccustomed—such as pain, poisons, passions; changes of temperature,

local injuries, &c. The indirect debility of a nerve important to respiration, will rapidly produce real debility; the same state of a nerve necessary to assimilation will be followed with a like effect, but more slowly.

The greater number of remedies may be divided into two classes,—viz. for diseases of direct debility, substances of a cordial or nourishing nature; for those of indirect debility, counter-irritants. The man whose ideas of a counter-irritant is limited to epispastics and other external applications, has much to learn in his profession.

Counter-irritation is among the most powerful and extensive means of cure we possess. The substances by which we produce it will cause, in a previously healthy state, diseases perfectly analogous to those for which we prescribe them; and, like “poisons, take their different seats in “the body, as if allotted to them.” When admitted into the circulating system, they may irritate one class of nerves but not another; some may even have their influence limited to particular nerves, or portions of nerves.

Strichnine, belladonna, stramonium, &c. are in health irritants to the cerebro-spinal system. They produce spasms and palsies: hence their

success in such disorders. Belladonna, moreover, can produce a disease like scarlatina : It is therefore useful in guarding against that disorder. Stramonium is the best remedy for priapism, a disease which I have seen it produce.

Iodine irritates the nerves of assimilation, which is proved by its long use causing wasting of every gland and muscle. It prevents chylification ; which is shewn by the cholera asphyxia its long-continued administration has been known to occasion. It has therefore been found to be a successful counter-irritant in scrofula, a disease of the assimilating organs ; and in goitre, a disorder of the absorbents.

Mercury has been successfully employed in many diseases ; but its *modus operandi*, I fear, has not been understood. It can produce fever, dysentery, rheumatism, iritis, cutaneous, osseous, and glandular diseases. That it has actually cured diseases to which we give the same names, proves that it has merely acted as a counter-irritant to the nerves affected. Nor has its good effects been limited to such diseases as are produced by identity of cause : It is equally effectual in rheumatism from cold, as in that produced by the syphilitic virus.

Arsenic exerts a wider influence over the constitution. Besides the structural diseases which it can produce and cure, in common with mercury, it can also cause tremblings, spasms, palsies. Its success in ague, epilepsy, and paralytic disorders, is explained by its counter-irritating power over the nerves affected in these diseases.

The passions of the mind have upon this principle cured different disorders. Thus ague has been cured by terror, surprise, grief, joy, &c. In these passions, the same muscles become tremulous as in ague. Respiration is similarly disturbed, and the secretions are equally vitiated and varied,—a sufficient proof that these moral causes affect the identical nerves implicated in this disease in a physical manner. It is thus we explain the action of such empirical prescriptions as cobwebs, live toads, moss from the dead man's skull, &c. These, through the brain, influence the same nerves, not by any intrinsic virtue of their own, but by the horror and disgust which they naturally occasion. The shudder of the patient is a proof of their *modus operandi*.

The beneficial effect of blood-letting in many diseases is sufficiently appreciated, but its manner of action is not so generally understood. It is

supposed to be simply an evacuant or antiphlogistic remedy. Dr Clutterbuck is the only author who, so far as I am aware, has explained its counter-irritant action. Blood-letting not only relieves an overburdened part of the system, but it also, at the same time, influences like an irritant the whole nerves of the constitution, and by consequence those very nerves whose original *indirect* debility was the cause of the congestive or inflammatory disease for which it was directed. The same observation may be extended to emetics and purgatives. These remedies, especially the former, counter-irritate every nerve of the constitution, and counteract or aggravate, according to the state of the patient, the existing irritation.

The particular stage of every disease will indicate the counter-irritant most proper to be selected with a view to a cure ; for there is a time in all diseases when a particular remedy may be beneficially prescribed, and there is a period when it would be equally hurtful. Need I instance venesection, mercury, and purgatives, in proof ? How often have I seen fever, dysentery, rheumatism, hepatitis, &c. terminate fatally, by a desperate continuance in modes of treatment, which,

however indicated in the earlier stages, only added at a later period to the existing inflammation or irritation. To illustrate this more fully, I may take the case of an external ulcer, which we cure by a blister, and another, in which the powers of life are so low, that the same application produces a disposition to gangrene. Now it is the same with mercury in dysentery. Like the blister, at the commencement it stimulates incipient ulcers of the colon into healthy action, while in the later stages, or in weakly subjects, it produces mortification.

From this digression let us now turn to our more immediate subject—Cholera Asphyxia. I have already, I trust, made out a fair analogy betwixt this disease and ague. The means of cure during the cold stage of the latter, are the best mode of treating the former. It is to be regretted they are not equally effectual. Could we anticipate an attack of cholera, in nineteen out of twenty cases, perhaps, an opiate, a powerful stimulant, or a common emetic, might save the patient. At an early stage of the disease I have seen each of these successful. Where the stomach has been irritable at the commencement, I have been able to bring on reaction by an ano-

dyne lavement : at a more advanced stage, opium has appeared to me to hasten the state of stupor which so often precedes death. Brandy, were it not for its intoxicating power, would perhaps be the best cordial to which we could resort—I have seen it more than once disadvantageous on this account. By stupifying the sensorium, it withdrew the stimulus of the will from the external respiratory muscles. Ammonia appears to me preferable, and it is better adapted to the later stages. In prescribing stimuli, however, we must bear in mind, that, when frequently repeated, they too often exhaust the very principle which it is the object of our most anxious solicitude to support.

It has been observed by some intelligent practitioners, that where repeated violent vomiting was a prominent symptom, recovery more often took place than where this was either less violent or altogether awanting. Dr Denman has made a similar remark regarding vomiting in haemorrhage :—“ When patients have suffered much “ from loss of blood, (he says), they will often “ have a sudden and violent fit of vomiting ; and “ sometimes under circumstances of such extreme “ debility, that I have shrunk with apprehension “ lest they should have been destroyed by a re-

“ turn or increase of the hæmorrhage, which I
“ concluded was inevitable after so violent an ef-
“ fort. But there is no reason for this apprehen-
“ sion ; for though the vomiting may be consi-
“ dered as a proof of the injury which the consti-
“ tution has suffered by the hæmorrhage, yet the
“ action of vomiting contributes to its suppres-
“ sion, and *to the immediate relief of the patient*,
“ perhaps by some revulsion, and certainly by ex-
“ citing a more vigorous action of the remaining
“ powers of the constitution ; as is proved by the
“ amendment of the pulse, and of all other ap-
“ pearances, immediately after the vomiting.”

Mr John Hunter looks upon vomiting in nearly the same light ; although produced by debility of the brain in the first instance, it has the effect to reflect strength back upon the constitution.

As a powerful means of counter-irritation, then, in this disease, I am disposed to entertain a most favourable opinion of emetics. In nine successive female cases where I employed large doses of ipecacuan, I must ascribe the recovery which took place in all, in a great degree, to these remedies. The judicious use of emetics, with an occasional stimulant, appears to me to be a good practice.

Calomel, the drug to which the practitioners of the East resort in all diseases,—in the boasted calomel I have no faith as a remedy for cholera. If we have proved, and we trust we have proved, even to demonstration, that the rapid dissolution of the patient is caused by debility amounting to actual palsy in the muscles of respiration, ought we to trust to a substance which can only act upon them by a long and sustained use? Over these muscles calomel has no immediate power. If it be said, that it acts on the liver and secretory organs, I answer, that it is premature to direct our attention to these when the patient is sinking, not from their abundance or suppression, but from palsy of the respiratory muscles, with which, as already mentioned, they have no relation, either in the light of cause or effect,—they are only coincident symptoms.

We have alluded to the similarity of symptoms from the cobra's bite. The same loss of nervous influence over the respiratory muscles, is the cause of the asphyxia in that disease, and in the disorder produced by arsenic. The natives of India treat those bit by the cobra with this latter poison; and, in some provinces in Bengal, the cholera has been met by the virus of a species of

this snake. Reflecting on these facts, I was led to give arsenic a trial in cholera. In the case of a native, I gave two drachms of the arsenical solution as a dose. This dose, however large it may seem, was not more than enough; for if in this disease the eighth pair of nerves are in a palsied state, a small dose would do nothing—Mr Brodie having found, that, after their artificial paralysis, arsenic had not its usual effect upon the stomach. In this instance, the man recovered. An European female took a drachm of the same preparation every half-hour, to the extent of four drachms. She was then treated with stimulants, and the case terminated successfully. Previous to these trials I had employed the fumes of arsenic, which I made the patients inhale from a tobacco-pipe. The recoveries and deaths were nearly equal; but in some of the cases the patients were in a hopeless state. I abandoned this mode of introducing this medicine into the system, from a doubt of its being so manageable as the other.

Where spasm of the heart or diaphragm occurs in the course of this disease, the prussic acid, from its rapidity of action, might perhaps be given with advantage. I once had occasion to

prescribe this remedy for traumatic tetanus in the horse. A drachm of it was injected into the rectum, and the animal obtained twelve hours respite from both the lock-jaw and the spasms.

The successful experiments of M'Intosh and others, of bleeding in the cold stage of ague, are now brought forward as a reason why the same practice should be adopted in the analogous stage of cholera.

Dr M'Intosh supposes that success depends upon relief of congestion :—To me, it seems to depend upon the production of a new disease; namely, approaching syncope, a state which supersedes the first disorder,—for the effect frequently takes place from the loss of a few ounces of blood. Fear of the lancet may also have some share in the cure. Is not this further borne out, by the greatest and most certain relief being given by this practice before or at the very commencement of the shivering fits? in other words, before the first disease has manifested its full action, and from the circumstance, that the natural relief of congestion, by the sweating stage, does not prevent a recurrence, while venesection sometimes does? Fortunately for the ague patient, the knowledge of the period of accession affords his

physician an opportunity to bleed the moment the rigors appear. In cholera, on the contrary, from the early difficulty of respiration, real debility of the whole system soon occurs. The patient is almost in the identical situation of a person who has lost much blood; for he possesses but little oxygenated blood, and the means of obtaining it is denied him by a similar palsy of the respiratory muscles. The abstraction of a few ounces then is often difficult; and if syncope follows, it too often terminates in death. I have had too many opportunities of witnessing the practice, to be at all sceptical as to the injurious effects of venesection. In numerous instances, where the event was doubtful, the use of the lancet turned the scale, and ensured an unfortunate issue. Mr Annesley, in his work upon this disease, is loud in his praises of the lancet; but he would appear to be led into this laudatory language solely by his theory of congestion. Congestion, instead of being the cause, as he thinks, of the nervous derangement, is the effect of the latter. "Venesection," Mr Travers well observes, "is one mode of relieving congestion; but a more pernicious one could not be devised, when the congestion is the obvious result of a sudden

"and extreme depression of nervous power." So perfectly do the symptoms of a cholera patient resemble those from haemorrhage, that were Mr Annesley called to the couch of an individual suffering from this, he would, were he not previously informed of the cause, bleed to relieve congestion. By diminishing the brain's influence over the eighth pair of nerves, whether by their section, a blow, passions, poisons, or loss of blood, a like congestion will be found after death as in this disease. Dr Abercrombie examined the bodies of two patients who died from loss of blood, and found the veins of the brain gorged, as in cholera, with dark blood. Mr Annesley recommends venesection in all stages. How does he reconcile this measure with the fact, that, upon raising the head of the sufferer, he sinks fainting in the attendants' arms?—He says it is to get rid of dark blood. And why is this blood dark? Is it not because it is defective in its constitution? It wants a constituent principle. By lessening its volume, will this principle be supplied? Surely defective nutrition is better than no nutrition at all? It is not the presence of black blood in the brain which destroys the patient, but the absence of arterial blood, without which every nerve is

deprived of its energy. Why then rob the brain of the little oxygenated blood which it may still possess ?

Many bleed, blister, and stimulate, in a breath, in cholera asphyxia. This is Mr Annesley's practice. Is it sensible or scientific? Although *local* depletion may, without any inconsistency, be combined with generous diet, I do not know any disease in which stimulants and general depletion can, with any shew of consistency, be simultaneously had recourse to. In enteritis, it is true, we are often obliged rapidly to *change* from the antiphlogistic to the cordial treatment; but, even in this disease, to stimulate and bleed generally at the same moment, is a most fatal error. It is possible that the lancet, by inducing the counter shock of syncope, might be useful before the full development of the symptoms of cholera—that is, while there is yet a considerable proportion of oxygen in the circulating system; but we seldom see a patient in such a state, and the premonitory symptoms, as Mr Scot* has truly observed, are merely the feelings of mal-aise which precede

* Madras Report.

almost every other disease. When cholera is fully manifested, the treatment should be one that combines counter-irritation with support, counter-irritation without diminution of the material of power,—an indication which I need not say venesection is not then calculated to fulfil.

But Mr Annesley tells us that the lancet subdues spasms. I have already shewn, that spasm of a muscle is the result of the brain's diminished influence over the nerve that supplies it. While the pulse is full and bounding, there can be no objection to the employment of the lancet as a counter-irritant in cholera ; but where the patient is pale, and almost pulseless, the employment of the lancet to subdue a spasm of the extremity, is a ready means of paralyzing the already wearied respiratory muscles, and consequently hastens asphyxia.

It is unfortunate for the patient when the practitioner prescribes solely for a name. We have already pointed out the difference betwixt cholera asphyxia and cholera mitior. They are two very distinct diseases—as distinct as epilepsy and ague,—though, like these, sometimes produced by one and the same cause. Having their origin in the same epidemic influence, they receive the same

denomination. Ought they to be similarly treated?

When I first read in Mason Good, that Dr Burrell saved 88 out of 90 of his later cases by bleeding, I could scarcely credit the evidence of my eyes. But when, upon turning to the pages of Mr Orton, I found these were all cases of cholera mitior, cases where the pulse was full and bounding, my astonishment at once ceased; for this form of the disease generally terminates well under any mode of treatment. It was in such cases Mr Whitelaw Ainslie worked miracles with a few grains of magnesia. When he proposed the same remedy for cholera asphyxia, he shewed he had at least some faith in simples.

The warm bath may be used with impunity in cholera mitior: Not so in cholera asphyxia, where it is the most deadly measure, next to blood-letting, that can possibly be pursued in the disease. The death of Seneca will occur to the mind of such readers as keep in remembrance the identity of symptoms with those of loss of blood. In every instance of impeded respiration, from whatever cause, the warm bath must be a superadded injury. The shock of the cold bath at the very commencement might prove useful in

cholera asphyxia. In Persia, however, when the disease raged there, its indiscriminate use would appear to have increased the mortality from the disorder.

Every nervous disease, by whatever produced, has a tendency to disappear after a particular period. The ancients had some knowledge of this when they ascribed critical days to fevers. Mr Brodie has given instances, where, after apparent death from poisons which caused a disease similar to cholera, he has by artificial respiration kept up life till the brain had become accustomed to the shock, and the animal was thus restored to life under circumstances where it must indubitably have died without such a process.

Having, we hope, proved that, in the generality of cases of cholera, death takes place from a paralysis of the eighth pair of nerves, ought we not to adopt the same means which succeed in relieving the difficult respiration consequent to their artificial palsy? The raising of the chest, and the lank and depressed state of the abdomen, are sufficient indications of this form of the disease.

Dr Holland, considering that the dyspnœa, from the division of these nerves, chiefly arose from the

paralysis of the muscles of the glottis, after having divided the nerves in some rabbits, immediately opened the trachea, and fixed a tube in it. Under these circumstances, the animals were observed to breathe freely, and to lose but little of their activity. "When killed, after a certain number of hours, no congestion was found in the lungs."

In experiments upon dogs I have repeatedly bled the animal to a state almost of inanition; but when an opening was made into the trachea, the chest was observed to become expanded, and the circulation again returned, under circumstances where death would indubitably have taken place without this operation. I am led to anticipate, that such an opening might be much more beneficial than even the transfusion of blood in hæmorrhagic cases.

With what danger could the same operation be attended in cholera? How often have I heard the cholera patient say, "I have a cutting in my breath: I am suffocated." That particular distress might be at least relieved by the measure, for the external muscles of respiration having longer life than those of internal parts, they generally act when the action of every other has ceased. Such an opening would facilitate respiration.

Congestion in the right side of the heart would be relieved by the expansion of the lungs, for the blood would then pass freely to the left ventricle : from this, arterial blood would be sent to the brain, which would thereby regain a degree of power over every nerve, that might enable it perhaps to bear out against the viewless cause of its depression, until that cause should cease to operate.

Although I have hitherto said nothing of the application of galvanism to the eighth pair of nerves in this disease, it is not because I have no faith in its powers. I believe that life might be preserved in some instances by its use ; but it must be obvious how very limited would be its beneficial influence, when we consider, that the disease is most fatal during marches, &c. when neither time nor opportunity could be had for its employment.

SINCE these pages were written, I have read of the prevalence of the disease in Russia and Egypt. More recently I have learned, that its appearance in England has given rise to a belief of its contagious nature. I have never met a single medical

officer in India who espoused such an opinion, which indeed is opposed to the general feeling on the subject, both in and out of the profession. The lately published statements of Mr Orton and others have therefore taken me by surprise. Until I have studied this subject more at leisure, I think it both prudent and proper in the mean time to suspend my own opinion. Contagion, however, I may remark, never once excited a fear in my mind while attending hundreds of affected individuals.

The proofs of a disease being not contagious, must be either analogical or negative.

That the identical disease called *cholera* can be produced by loss of blood, poisons, passions, and local injury, may be looked upon as among the analogical proofs that cholera is not contagious. Small-pox, measles, plague,—each of these has some feature of its own which distinguishes it from all other maladies. It has something which cannot be produced by art. Every and all of the forms of cholera may be brought on by artificial means. Moreover, unlike every other contagious disease, former attacks of it are no security against future invasions.

I have seen many instances which might be considered as negative proofs of cholera being non-contagious. I give the following examples:—

Captain ——, 30th Foot, was seized with cholera, and died. He was attended by myself, and seen by two other medical officers. The greater number of the regimental officers came to see him—some of them even shook hands with him; his native servants waited on him, rubbed his limbs when cold and cramped, and did other duties which brought them into the most perfect contact with his person; yet not one of these ever became attacked by the disorder.

Captain M——, 26th Foot, was heard moaning in the night by one of the sentries, who, upon entering his room, found him ill of cholera. This gentleman was attended by two medical officers of his regiment, and myself: He was seen by several of his regimental friends, and had his arms and legs rubbed by native servants; yet none of the many who touched his person exhibited any symptom of the disease to which he fell a victim. Could any two such examples be adduced in the case of small-pox, or any of the recognized contagious diseases?

Mr Moir, who has written a pamphlet on the disease as it appeared at Musselburgh, expresses himself perfectly convinced of the contagious nature of cholera. The instances which he gives, however, are not conclusive. In these cases the individuals were subjected to the local atmospheric influence of particular dwelling-houses. He gives no case where the patient caught it, from attending any individual attacked, after having withdrawn himself from the house in which he was supposed to have caught it. But even this would not settle the question. I have already shewn, that the disease can be produced by passions. Terror of the disease, or grief for a relative who may have died of it, will, in a weakly individual, give origin to all its symptoms.

Mr Orton has indeed shewn, that the disease, after having made its first fearful ravage in the Marquis of Hastings' camp, spread *in successive time* to various other parts of India, as from the centre of a circle to the circumference. This, perhaps, is the strongest fact that the contagionists have yet adduced. But I have already shewn, that all nervous diseases have a tendency to propagate themselves by terror; and where the atmospheric influence predisposes to cholera, any

depressing passion will frequently produce every symptom of this disorder. Cholera, however, is not a new disease ; nor would any one who thoroughly understands its nature indulge in the idea that it is. In India, it can be traced as far as medical records extend. In some places of the Peninsula, it has been endemic time immemorial. The natives, it is true, are fearful of taking up their abode in such situations when it is prevalent ; but this is not from fear of contagion, but because they know that they subject themselves to the same atmospheric influence by remaining there. The disease has prevailed in England years ago. Sydenham describes its symptoms in his time : they are identical with the Indian cholera. Two years ago, Dr Perston, surgeon of the 4th Light Dragoons, shewed me some manuscript cases which occurred in Ireland among the 26th Foot, of which he was then surgeon : I recognized at once the Asiatic cholera in all its features.

It often happens, that a regiment in which it prevails, by shifting its ground, or crossing a river, in a day's time gets rid of the disorder. The disease will sometimes be endemic in a particular regiment, while another in the immediate neighbourhood entirely escapes, although the most per-

fect intimacy subsists betwixt the two bodies of men. The locality of the suffering regiment will account for this.

It has often been said, that one positive fact is worth a hundred negatives. This is not quite true ; but, at all events, the positive fact should be a very stubborn one indeed, to convince us of the necessity of closing our ports, stopping our commerce, and interdicting intercourse betwixt man and man. A gloom is in this manner thrown over the minds of the mass of the people ; and nothing, I am certain, conduces so much as panic to favour the ravages of cholera asphyxia. The natural effects of such measures, too, must add to the poverty of the indigent classes : their food will consequently be scanty and depraved, and we shall soon see the horrors of the Penitentiary extensively pervading the British Isles.

It is contemplated to shut the doors of the theatres, as one of the means of guarding against contagion. If, as it would appear from the various reports in the newspapers, the disease is confined to the poor and intemperate, theatres and other places of amusement are not the most likely places into which contagion will find its way, sup-

posing the disease to be of a contagious nature. Why then shut them up?

A good deal of quackery and humbug has been mixed up with this question. That medical men and nurses have an immunity from any recognized contagious disease, from their constant attendance on the sick, I believe to be untrue. Among the many young medical officers who arrive at the different presidencies of India fresh from England, and who are at once and without any preparation introduced to the hospitals where the disease is prevalent, has there been observed any mortality from this disease? I never heard of a single case. Can a similar fact be cited in the case of small-pox or the plague? The truth is, there are few diseases which have not some time or other been thought to be contagious. Ophthalmia, fever, dysentery, ague—each in its turn has had this opprobrium fastened upon it. I shall not be astonished if hepatitis be soon added to the list; for in medicine, as in religion, there is nothing so absurd but will be brought forward as true or miraculous; and, having been so, will find everywhere, and among all classes, its dupes and disciples. Let us not surrender our judgment to our terror. If facts

favouring the notion of contagion do come before us, let us view them dispassionately, and without timidity. Let us examine them in all their bearings, but be cautious how we construe them either one way or the other. An embargo upon trade betwixt town and town—the shutting up the gates of cities and of garrisons—are measures that cannot long be enforced without giving rise to many miseries, and these too of a nature much more painful than what in fancy we flee from ;—gloom, discontent, and penury, can cause diseases of a more disgusting kind than cholera. Those who are most disposed to view the disease as contagious, are yet fain to seek other causes to account for its spreading. Contagion then does not explain it. But if it be indeed contagious, from all that I know of the disease I will venture to prophesy, that *cordons sanitaires*, instead of checking it, will widely tend to spread it about the land, in every dwelling, from the palace to the hovel.

Sir James M'Grigor informs us, that during the Peninsular campaigns tetanus prevailed to an alarming extent. The atmospheric influence of the Peninsula predisposed the constitution to an attack of this disorder from the most trifling wounds. Nobody, however, dreamed that the

disease was contagious. To the slightest causes cholera may often be traced during the epidemic influence. The clouded sky, the uncomfortable air, and the feeling of insecurity which every individual entertains when the very mention of a case is made, predisposes to attacks from causes so slight as to escape the notice of the most observing men.

The best preventive of cholera is serenity of mind. The present panic which prevails upon this subject is not the most likely way to get quit of it. Comfort in clothing, the happy medium in the pleasures of the table, and a perfect contempt for rumours of the prevalence of the disorder, would, I feel assured, go far to render people unsusceptible of its power. The higher ranks would thereby better shew their reliance on Providence. They should drop the bulletins and reports which are daily produced on the subject of the disease. These only keep up public alarm, and tend to make men selfishly alive to what God will take from them at his own due time—the existence which he gave.

WHILE these pages were passing through the press, I have been able to look over some of the publications which have lately made their appearance on this disease. It was only a few days ago that the paper of Dr Wilson Philip came into my hands. That talented physician has remarked the analogy betwixt the effects of division of the eighth pair of nerves and cholera. I have already, in a note, mentioned that I had published, upwards of two years ago, my belief that paralysis of these nerves is the cause of death in the disease. I may therefore, I presume, lay claim to priority. Besides, the manner in which I reconcile the symptoms with the results of dissection reports, is totally different from that of Dr Philip. Which is the true one, the profession can determine.

Dr Philip thinks, that the difficulty of breathing, and the dark colour of the blood in cholera, and on division of the eighth pair, is owing to the phlegm accumulating in the lungs; but, as in both cases artificial respiration restores the red colour of the blood, I hold it as conclusive, that this deepening of the blood takes place from the air being unable to enter the windpipe by the patient's own efforts.

I need not say how useless the attempt at inhalation of oxygen gas will be in cases of cholera. The fact is, the patient would recover if he could only fill his lungs with the common atmospheric air.

Dr Philip, in his paper on cholera, makes the following remark :—“ In the most severe and “ long-continued fainting, in which the powers “ of circulation are as much diminished as is con-“ sistent with life, we observe no analogous effect “ on the internal organs.” The reason of this is obvious :—In common fainting, the whole respiratory muscles at one moment cease to perform their office; there is no continued effort to inspire followed by expiration; the lungs do not therefore suffer greater collapse than they generally do where death takes place in lingering disease. The blood is therefore more uniformly distributed throughout the body than in cholera, for it can pass through the lungs with much less difficulty.

ON
TETANUS.

MR ORTON has expressed his belief, that a correct knowledge of so Proteus a disease as cholera, would lead to important pathological views of other disorders. We have seen that trismus has been one of its occasional symptoms. This disease may arise from many causes. These, however, must influence the same parts of the nervous system in the same manner. The disorder, then, must be one either of direct or indirect debility : in both instances, one of irritation. Proceeding from atmospheric changes, &c. it has no reference, in the first instance, to either the quality or quantity of the fluids of the body ; but, according to the number of nerves affected,

will its accompanying symptoms vary, being as often unattended by fever as seen in combination with it: the secretions, too, in one case, being suspended, in another abundant, vitiated, or natural.

The danger of spasmodic disorders bears a relation to the importance of the affected muscle to the immediate functions of life. Cramp or rigidity of one or more of the muscles of a limb, is of itself only inconvenient, so far as it affects the motion or sensation of the limb itself; constitutionally considered, it is a thing of no moment: but when, as in tetanus, the irritation which produces it extends to muscles more especially requisite for vital action, then, and then only, is spasm of itself dangerous.

Although the disease is in India of rare occurrence in the human subject, I have not been without some opportunities of witnessing it in man; and I have seen it frequently in the horse. The symptoms in both are so identical, that any observations applicable to the one, will be found equally true in the other. However fatal we must acknowledge the disease to be, the immediate cause of death is very various. Sometimes it takes place from a sudden spasmodic action of

the constrictor muscles of the larynx ; again, as in the majority of cholera cases, it has appeared to me to be the effect of a palsy of the dilating muscles of the glottis. An excess of secretion from the bronchial passages, in the shape of a pinkish sputa, has in some cases been the cause of suffocation ; while, in other instances, I have seen life terminated much the same as in other diseases, by a general debility of all the respiratory muscles. The sixth or seventh day, for the most part, determines the life or death of your patient. It not unfrequently happens, that while you write in your notes, that upon the whole the patient is better, (his jaw, perhaps, being a little more moveable), he is suddenly seized with a spasm of the constrictor muscles, and falls down asphyxiated at your feet.

I was suddenly called about noon to a patient with tetanus, (from loss of blood), whom I had reported better at the morning visit. The dresser said he was taken with convulsions. When I reached the hospital, he lay apparently dead. Believing that he had been strangled by a spasm of the nature now described, I pushed a bistoury into his trachea ; and while I kept the artificial orifice open with my fingers, a deep inspiration

was made, the eyelids opened, and the patient continued an irregular kind of respiration of about ten minutes' duration, throwing out, at brief intervals, a quantity of sputa of a pinkish colour. Though constantly wiped away as it appeared, he eventually sunk, apparently suffocated by the unnatural secretion.

Some writers have supposed, that the nature of this disease might be discovered by *post mortem* research. They have examined the spine, and found its veins turgid with blood. This is the effect, not the cause, of the disease. Such an appearance of these vessels will be found in all who die of asphyxia.

The remedies which have been occasionally attended with success in this disease, have, with a few exceptions, been all of a counter-irritant nature. Opium, stramonium, strichnine, arsenic, and prussic acid, are all capable of giving a similar disorder. Blood-letting and the cold bath may be also considered in the same light; although these last, doubtless, have also been useful in bringing on a disorder to a certain extent incompatible with lock-jaw, viz. a tremulous action of every muscle of the body. The general want of success of all these remedies, however, shews how little the disease is

under the controul of remedial means. The mode of treatment, whatever it be, selected by the practitioner, ought to be pursued steadily and with boldness. Should he prefer bleeding his patient, quantity ought not to influence him in the slightest : he ought to bleed to syncope, and be in no hurry to recall the patient from this state. Should he select the cold bath, *deliquium animi* ought to be the signal to take the patient out. The nervous system must suffer a decided shock, to enable it to forget, if I may be allowed the expression, the particular irritation which it is the business of the physician to conquer. A horse, into whose veins I introduced a watery solution of nux vomica, on the fifth day received no benefit. The medicine, however, was not inactive ; it produced a shivering fit of some duration. It was the same animal which received a twelve hours' respite from all the symptoms by means of prussic acid ; but that was on the first day. I have regretted the want of this acid in some cases of the disease ; and in that instance I expended at once all that I possessed or had the means of obtaining. I have again and again tried the effect of a moxa to the back. In one instance, the animal was so far

benefitted as to be able to turn round its neck, which before was perfectly rigid ; it died the same day, however, of a sudden spasm of the constrictor muscles of the larynx.

ON

FEVER.

THE fevers of India, so far as they have come under my observation, differ little in their features from the more common fevers of Europe ; assuming like these, the intermittent, remittent, and continued types. The paroxysms of the intermittent and remittent vary in number, length, and intensity ; and the intervals betwixt the paroxysms differ in both. Typhus fever I have never witnessed in India.

The view which we have already taken of the pathology of ague is, we believe, founded on correct physiological principles, and leaves us nothing to add in elucidation of its symptoms in this place. It is a disease purely of the nervous system, closely resembling cholera, and, like it, originating in

various causes,—each, however, acting directly or indirectly on one and the same class of nerves. According to the number of nerves affected, will the symptoms of the patient vary. The most painful and occasionally fatal form is that in which the respiratory nerves are implicated. In India, however, it is for the most part as mild and easily treated as cholera is intense and intractable. With bark, its preparations, and the arseniate of potass, the practitioner will seldom fail in effecting a cure. Where the disease is of long standing, and refuses to yield to these remedies, it will be generally found to be complicated with disease of the liver, spleen, &c.; and calomel will cure it after every other remedy has failed. Sometimes, however, the disorder will not yield until the former medicines have been resumed, after ptyalism has been induced. I have had no experience of the modern practice of bleeding in the cold stage. A mode of treatment somewhat analogous was occasionally followed by success in the agues of Walcheren. Ligatures were put round the arms and thighs, and the nervous system received a similar shock from this temporary abstraction of blood from the brain. This had an advantage over bleeding at the arm; for in such cases the

blood previously retained in the extremities could be returned to the constitution on the removal of the ligatures.

" I cannot," says Dr Denmark, " explain why " what are usually called the two great remote " causes of fever, namely, marsh miasma and " contagion, should produce a disease identically " the same; or why a fever, in every respect " similar, should be produced without the inter- " vention of either. It comes daily under our " observation in the navy; and I may aver, " without much fear of contradiction, because it " is notorious to every surgeon who has served in " the Mediterranean fleet, that the bilious re- " mittent is much more frequently contracted " from the more palpable sources of fatigue and " intemperance, especially in drinking, and vicis- " situdes of heat or cold, than from either miasma " or contagion."* To this proposition I most cordially subscribe; and to explain it I would simply suggest, that the cause, whatever it be, affects the same parts of the constitution, or,

* Medico-Chirurgical Transactions.

in other words, is an irritant to the same class of nerves.

I have already, I hope, proved, that according to the degree of diminution of nervous influence over any organ, will the function of that organ be increased, grow languid, or cease altogether. All these phenomena may be often witnessed in different organs at the same time, in a single case of fever. The symptoms of fever are, headach, pain of the eyeballs, back, loins, and limbs, mental and muscular lassitude, or delirium or spasm, hot skin, bounding pulse, thirst, furred tongue, vomiting, with vitiation and variation of the senses and secretions. But if we consider, that not one of the above symptoms is constantly to be found in any individual case, some of them indeed being incompatible, we must admit that the number of nerves affected varies with every case.

I have often been at a loss whether to call a particular set of symptoms cholera or fever. Thus, an individual may have hot skin, quick bounding pulse, and bilious vomiting. Is this fever or cholera? If he has purging also, which I have already shewn is not a constant symptom of cholera, we do not hesitate a moment to place

the case under the latter denomination. Without disputing about the name, it is plain that the gastric portion of the eighth pair of nerves, and those of the alimentary canal, are in a similar state as in that disorder; but from the state of the skin and pulse, which are the real important symptoms of the disease, we might with more justice call the case fever. Were the pulmonic portion of the eighth pair of nerves affected in the same manner, the symptoms of heat of skin and bounding pulse could not exist; for the state of the lungs, in consequence, would be a bar to the transmission of the same quantity of blood to the arterial circle, but the pulse nevertheless might be equally rapid. We should name the disease in this case cholera asphyxia: and this very disease has been observed to be caused by the same local influence to which fevers generally owe their origin. Mr Geddes, in his report on the Seringapatam endemic fever, says, “ Other “ appearances occasionally manifesting them-“ selves have been, a sudden failure of the vis “ vitæ, putting on the appearance of a case of “ cholera.”

Fever is a disease simply of irritation, of direct or indirect debility;—direct, if produced by loss of

blood or defective nutrition,—indirect, where the nerves are primarily affected without any relation to the quantity or state of the fluids of the body. The latter, when it is of long continuance, passes however into the state of direct debility, because assimilation is prevented in consequence.

The fur on the tongue, so generally supposed to indicate foulness of stomach, is merely a symptom of a variation of the secretion of the tongue itself, which is proved by its often becoming clean during the operation of blood-letting, or while the patient undergoes the cold affusion. The morbid secretions, by many believed to be the cause, are merely coincident symptoms, depending upon the same general constitutional irritation. The quick pulse shews that the nervous system has lost its controlling influence over the heart. The slow languid pulse, on the contrary, marks a diminished state of the acting power of the heart itself. The heat of skin partly depends upon the condition of the blood and its transmission through the lungs, and partly (I should say in a greater degree) on the change in the condition of the nerves; for it is sometimes present, though not to the same extent, when the circulation seems to be undisturbed. It is greater,

too, in the palms and soles of the feet, parts most distant from the circulating centre. The headache admits of a similar explanation; for, like heat, it is frequently present when the pulse has no unusual frequency. When the respiration is disturbed in fever, this takes place partly from the unusual frequency with which the blood is propelled through the lungs, and partly from the languor of the respiratory muscles. To this difficulty of respiration the thirst may be in some measure ascribed, though it also depends on the condition of the nerves. We can easily understand how fever may terminate in visceral and structural disease. Every man has, in a physical as well as moral view, his weak points. This may either be the effect of his first organization, or be acquired from particular habits or climate. The rapid transmission of blood through the brain or liver, supposing either of these organs to be from such causes physically weak, may excite there a local irritation, which, again, may induce inflammation; and we shall in consequence have a new set of symptoms, varying according to the meningeal or parenchymatous situation of the new derangement. Inflammation may also be an original feature of the disorder.

The well known effect of heat on the liver, and of cold on the lungs and alimentary canal, explains the frequency of the termination of fever in abscess of the liver in tropical climates, and in pneumonia or gastro-enterite in the cold and humid countries of the west.

The *post mortem* appearances found in the bodies of fever patients, are simply the occasional evidence of the inflammatory *effects* of the disease on different organs of the body, various and uncertain ; and in many instances there is not a trace of these. Upon such appearances, however, have been built the exclusive theories of Clutterbuck and Broussais ; both of whom look upon inflammation as the cause, however widely they differ as to its seat.

The sизy state of the blood drawn during fever, is merely an evidence of a change of this fluid, from the prevention of assimilation and secretion by general irritation. The same state of the blood occurs in pregnancy, during which there is a general irritative action in the female constitution. When blood drawn for relief of inflammation has this sизy appearance, this only proves that the inflammation has set up a constitutional irritation. In some inflammations and fevers this

state of the blood is not found ; assimilation and secretion will in these fevers be found to be little disturbed.

Like every constitutional disease, fever may be produced by the irritation of an inflammatory local disease ; but in the majority of fevers of an endemic or epidemic nature, inflammation, if it ever exist, is a feature or consequence of the general irritation.

Every intelligent practitioner knows, that blood-letting in a healthy subject can produce fever. Here few would maintain, that inflammation was the first link in the chain of causation. Inflammation, however, may become a feature or symptom even of this disease. It may be called into action by the same constitutional cause of irritation.

The single fact, that blood-letting sometimes at once cuts short a fever, is adduced by some as a sufficient proof of its inflammatory nature ; but this salutary influence may be better ascribed to its operating, partly on the affected nerves, and partly on another class of nerves, which, when disordered, give rise to a disease incompatible with fever, at least so far as fulness of pulse and heat of skin belong to it. The smallest quantity of blood that can be drawn, if it produce syncope,

has this effect. It acts not only on the nerves of the heart, but upon every branch of the par vagum. The state of the lungs is in consequence so altered, that the blood cannot pass with the same rapidity to any portion of the body. Any medicine that can influence the par vagum, will diminish fever. We may instance tartar emetic, and arsenic : they can, as we have already shewn, influence these nerves in a manner so as to produce all the symptoms of loss of blood.

When a practitioner tells you he always bleeds in fever, he only tells you, that he is a man of routine, in other words, that he is a bad practitioner. The records of physic sufficiently attest, that in many fevers blood-letting is absolutely hurtful. Would any man in his senses bleed in fever which he knew to be caused by loss of blood or defective nutrition ? That is, a fever from direct debility. Fever from indirect debility may, according to the constitution of the patient, admit, and, when complicated with inflammation, even call for the use of the lancet, being a fever which has no relation to the state or quantity of the fluids. Where, however, such a fever has been of long duration, the patient is much in the state of one suffering from fever of direct debility ; and the treatment

ought to be similar, or the same. Wine, opium, and cordials, which, at the commencement of a fever from indirect debility, no practitioner of experience would employ, may in this stage be administered with a watchful attention to their effects.

Though fever in some instances may be at once cut short by blood-letting, we have other remedial means which will do the same, without producing the same debility, and with as great certainty ; for this effect of blood-letting is far from invariable. Much more frequently have I witnessed this desirable result from continued doses of tartar emetic. In my own practice, therefore, I prefer at once to commence with this substance, which I generally combine in the first instance with sulphate of magnesia ; and I have every reason to be satisfied with my success. Where these means do not at once entirely check the fever, they, for the most part, materially lessen the patient's suffering, and they equally, if not better than blood-letting, prepare the system for the operation of mercurials.

The extent to which mercury is prescribed in India, is to be deplored. Instead of administering it constitutionally to relief of the symptoms, it is

constantly pushed to ptyalism—a state which is the effect, not the cause, of such abatement of the original disease. I candidly confess, that I am not friendly to the use of scruple doses of calomel. Such a quantity may be, and sometimes is given with advantage; but more commonly, particularly in advanced stages of disease, I consider its effects as more than dubious. I have seen much good from the frequent administration of two or three grains. In combination with from three to five grains of sulphate of quinine, such doses of calomel will be found very successful in checking fever, particularly where remissions, however slight, can be traced.

When delirium is an early symptom of fever, it is a common but fatal error to ascribe it to cerebral determination; and the patient is accordingly subjected to repeated leechings, which frequently leave him in such a state of real debility as to render recovery impossible. Delirium is more often one of the coincident symptoms of constitutional irritation, having but little if any reference to the state of the cerebral circulation. The affusion of cold water, and the employment of cold lotions, I have found infinitely more advan-

tageous than the local abstraction of blood, however obtained.

The cold affusion, indeed, when practicable, is one of the best, if not the very best means of putting an end to fever. It has a merit which no other remedy possesses,—viz. that should the fever return after its employment, the patient is not worse than before: he is not weakened as he most undoubtedly is by other medicines; and it can be again had recourse to, when every other method of treatment would be of doubtful advantage.

The best method of putting it in practice, is to place the patient naked on a wicker cot, and direct an attendant to throw water upon him from above, until the skin becomes cool, and the tongue clean and moist.

Purgatives, to which some practitioners trust exclusively for the cure of fever, are, in the commencement, advantageous, but often do injury in advanced stages; and are infinitely inferior to emetics as a mode of counter-irritation. In combination with these, as already stated, I consider them invaluable in the early stage.

With regard to blisters in fever, they are sometimes advantageous; but where the patient is

weakly, they are troublesome to dress, especially when applied to the nape of the neck, or betwixt the shoulders.

ON

DELIRIUM TREMENS.

THE name given by nosologists to the disease of which we are now about to treat, is an example of the unfortunate choice of a single occasional symptom to express a particular disorder. It might with more propriety be named the Ague of the Drunkard. The term "horrors," by which it is familiarly known to the soldier, is not inappropriate.

The abuse of ardent spirits gives rise to an infinity of diseases, each having its name according to its particular symptoms. These depend upon the nerves affected. One of the most common effects of continued potation is an universal or partial tremor of the muscles. This, as in ague,

may be accompanied with vitiation and variation of one or more secretions. Vomiting is often present ; and the patient usually complains of a sinking at the epigastrium, similar to what we remark in the cold stage of the intermittent. The character of the pulse is various. Delirium, though entering into the name of the disease, is one of its least frequent symptoms. The skin is rather colder than natural, with some moisture ; or it is dry and hot : the tongue, sometimes furred, is more generally clean and moist ; but tremulous withal, and not unfrequently indented with the mark of the teeth on the edges. The patient feels worse about noon and at bed-time. He is irritable, easily agitated, timid, and occasionally desponding. Want of sleep is a prominent symptom. Should delirium be a feature of the disease, he will talk wildly about his chest or papers being ransacked by some one bent on his ruin ; and in his ravings will accuse the medical officer in attendance of being instrumental to the same design. He fancies people speak to him, and will answer them in return.

Where an individual has been frequently the subject of such attacks, the pulse will sometimes sink so much as almost to be imperceptible at the

wrist ; it will occasionally intermit, run to 130 or 140 ; and the eye will be hollow in the socket, and the face become pale and cadaverous. Life, in such cases, is sometimes terminated by sudden paralysis of the heart.

In the milder forms of the disease, an emetic or purge will, for the most part, ameliorate the patient's condition ;—tranquillity, time, and the use of the cold bath, succeed in effecting a cure. Where the patient is worn, aged, and debilitated from climate or by long dissipation, a few drops of laudanum in a glass of brandy will, if discriminately administered, be the safer method of treatment ; for in this case purgation is often hurtful.

Whether the skin be hot or cold, the pulse full, or the reverse, blood-letting aggravates the disease. When delirium runs high, and the state of the pulse does not forbid it, the cold bath will prove highly beneficial ; but where, on the contrary, the pulse is feeble, with coldness of skin, cordials must be freely administered. When fever accompanies or succeeds to this disease, small doses of calomel and ipecacuan are in practice found to be advantageous. The same means should be resorted to when dysenteric symptoms

appear. In neither case should the lancet be for a moment thought of; for nobody bears loss of blood so ill as a confirmed drunkard. Even in apoplexy, from this cause, bleeding should be resorted to with very great caution. For myself, in such circumstances, I never practise it, trusting entirely to water dashed on the head from a height. I have found this practice very successful.

If cholera, fever, and lock-jaw, can be reflectedly produced by local injury, we cannot be astonished that all the symptoms of delirium tremens should sometimes owe their origin to a similar cause. In traumatic delirium tremens, opium is the remedy to trust to.

ON

DYSENTERY.

THE inconstancy of symptoms which we remark in fever, is equally a characteristic of dysentery. There is not a single alvine secretion which, in the course of the disease, may not be correctly and naturally performed throughout ; and there is not one that may not be varied, vitiated, or suspended. Tenesmus, pain of abdomen, griping, strangury, are not always symptoms ; nay, these may be all absent in some cases of the disease. The pulse, the tongue, the skin, are as often in a natural state as otherwise. The stools may be copious or scanty, bilious or the reverse, watery or bloody, or almost free from both ; they may be even altogether suppressed, as we know by the

untinged mucus which the patient, in the agony of tenesmus, again and again squeezes from the irritable rectum. According to the number of nerves affected, and the degree of their derangement, will particular symptoms appear or be absent.

Dysentery, like the other diseases to which we have already given our attention, may have its origin either in direct or indirect debility. Those who have escaped the primary effects of an alarming haemorrhage, very frequently fall victims to dysenteric disease. When it is produced by defective nutrition, it is termed scorbutic dysentery. The disease, as it occurs amongst the soldiery in time of peace, can generally be traced to intemperance in drinking, insolation, or to rapid transitions of temperature. In these instances, the nerves are primarily affected, the state of the fluids having little or no share in the disease.

On dissecting the bodies of those who die of dysentery, the colon is found more or less ulcerated throughout; in some places it may be livid and gangrenous. If ulceration has proceeded to a great extent, flakes of coagulable lymph will be found thrown out on the peritoneal covering, matting the other viscera more or less together. In

numerous instances, the liver will be found to contain an abscess, which, though suspected in life, might not have been denoted by pain even on pressure. The small intestines seldom partake of the other visceral lesions. The disease, from first to last, has consequently been supposed to have been confined almost entirely to the colon ; and has by some authors been absurdly denominated *colonitis*, or inflammation of the colon. “ But here, (in the words of Dr Johnson), is the rock on which most writers on dysentery split. They find, when the disease proves fatal, inflammation and ulceration in the bowels, and they immediately conclude, that the very last link in the chain of effects, was the first in the chain of causes.”

We shall endeavour to explain its true nature. Take a familiar case—An individual has inadvertently exposed himself to the night air ; he awakes with a feeling of sickness and griping about the navel. On his first going to stool he has an evacuation of feces only a little looser than natural, with some tenesmus, which every hour becomes more troublesome ; and is not relieved by his future attempts to procure evacuations, which, if he passes aught, are scanty and mixed with mucus ;

perhaps slightly streaked with blood. The disease proceeds unchecked; he has constant calls to stool; he passes nothing but blood and mucus; then pure blood comes away; and at last blood and water, having the appearance of raw beef washings. The time of occurrence and duration of these symptoms vary with every case. Death, however, closes the scene, and dissection exhibits the changes already described.

Now, in this instance, the cold night air to which the patient has exposed himself, has simply irritated a particular class of nerves in his system, namely, those distributed to the alimentary canal. Spasmodic and tremulous action taking place in consequence in the muscular fibres of the stomach and small intestines, he feels sickness and griping. The increase, diminution, and vitiation of the different secretions, are accounted for by diminution of nervous influence. Writers in general have confessed their inability to explain why the colon should, on dissection, exhibit so much disorganization, while appearances of disease are seldom observed in the small intestines. Had they reflected on the respective *uses* of these viscera, perhaps they might have been able to account for this. The small intestines being vital

organs, have more innate life than the great gut, and sooner recover their energy ; but the latter, being a mere receptacle for the debris of the system till the proper periods of expulsion, is not so bountifully provided by nature in this respect. Moreover, it has many large veins ; it consequently runs rapidly into ulcerative absorption,—a state which surely may be produced without any inflammatory process,*—and its large vessels becoming involved in the ulcers, these allow the blood to escape into the alimentary canal. As the disease proceeds, the irritation is communicated to the peritoneum, and inflammation, *in the last stage*, is set up, frequently preventing the escape of the contents of the intestine into the general peritonial cavity. The liver may be either primarily or secondarily affected. It is, from climate and habits of intemperance, generally enlarged and debilitated, and consequently soon runs into abscess, either in this or any other general constitutional disease.

* “ Parts may ulcerate with divers degrees of inflammation, “ or they may ulcerate without any inflammation at all.”—*Abernethy.*

Fever, like disease of the liver, may be either present from the commencement of the other symptoms, or may arise in consequence of the general irritation produced by these. The evacuations of blood being for the most part greater in the night, the patient is in the morning in a state of apyrexia : in the evening, reaction comes on ; the skin becomes hotter ; arterial pulsation is higher, and hæmorrhage is again, night after night, produced in consequence. Dysentery, then, is not necessarily an inflammation of the mucous coat of the colon, nor is the pain which is sometimes felt along the course of this viscus a sure and invariable evidence of inflammation ; for what will produce simple sickness in the stomach, causes real pain in the colon. This has been remarked by Mr John Hunter. In ulcers of the extremities we often find excruciating pain, which cannot brook the least touch, yet proceeding from any thing but inflammation. Inflammation, however, does occasionally form an early feature of the disease, and is marked by pain on pressure, with febrile symptoms, such as hot skin, dry tongue, &c. ; but there is little or no blood in the evacuations, for the adhesive lymph thrown out in the ulcers in dysentery of this description, na-

turally prevents the erosion of the blood-vessels. Inflammation, then, is sometimes a mode of cure.

Medical means, to be successful in dysenteric disease, should be early resorted to.

Thirty years ago the lancet was proscribed in the dysenteries of India; but to draw blood is now the first step of almost every practitioner. *In medio tutissimus.* The lancet, for the counter-irritating power to which we have already alluded, will often ameliorate the symptoms, though I have never yet seen it cut short the disease. The mucous membranes are not so easily influenced by blood-letting as the serous. In conjunctival ophthalmia it will doubtless unload the engorged vessels ; but in nineteen out of twenty cases, in an hour afterwards, they become equally full as before the operation. The patient gains only a temporary benefit at the expense of a constitutional loss ; a loss which the generality of soldiers in India, from their habits of dissipation, do not rapidly recover from. It becomes a question, then, whether or not we possess any other counter-irritating means which may not be liable to the like evil ? I have no hesitation in saying, that tartar emetic, in most instances, can effect every thing in dysenteric disease which may be done by the lancet, without the

disadvantages of the latter. In combination with sulphate of magnesia, I have found it cut short many dysenteries at once. In every case it will ameliorate the symptoms, and render the case more amenable to other remedies. The convalescence of the patient, moreover, goes on much more rapidly than in those cases where blood-letting has been resorted to.

My usual mode of practice in the disease is, on admission, to prescribe a grain and a half of tartar emetic, in combination with from four to six drachms of sulphate of magnesia, and this without reference to the state of the tongue, pulse, or skin; for the medicine is equally efficacious in dysentery, whether with or without fever. On the next visit, if the medicine has acted well up and down, ten grains of calomel are administered, and from two to three grains of the same medicine, in combination with a minute quantity of tartar emetic or ipecacuan, ordered to be taken every third or fourth hour. The state of the patient at the succeeding visits will determine whether these means should be continued or not. If the stools become natural and less frequent, the remedies may be changed for some light bitter infusion. If, however, the patient does not improve, they ought to

be continued for a few days longer. Should he retrograde under their use, I suppose then that the treatment aggravates instead of counteracts the existing irritation, and I drop it accordingly for a palliative treatment simply. Three or four grains of ipecacuan may be administered every second or third hour in their place. Should tenesmus be troublesome, an anodyne enema may be given, more or less frequently, according to the degree of relief the patient may experience. In later stages of the disorder, opium may be sometimes beneficially taken by the mouth, especially at the evening visit, as want of rest, if long continued, harasses the patient, and often of itself hastens a fatal issue.

When the patient is taking calomel, I must deprecate in general the further use of purgatives,—they only interfere with the mercurial action. The medicine first employed will, almost in every case, open the bowels freely; and the morbid matters, for which Mr Annesley entertains his unhappy horror, will either not be produced at all, or, if they are, will be passed off without the interference of the practitioner. Any pains complained of during the progress of the disease will,

for the most part, be benefitted by blisters. These should be large, so as to cover the region of the liver. In dysentery of an inflammatory character, where the abdomen is more than usually tender to the touch, venesection to relief of pain, or from twelve to twenty leeches, may be premised.

When pursuing the mercurial treatment, the practitioner ought cautiously to watch its effects. Should the patient manifest any irritability, or his gums become ulcerated without ptyalism, he may be certain that the action of mercury is deleterious. It ought instantly to be abandoned for a palliative mode of treatment. In practice, a little brandy and water will sometimes enable a worn constitution to take on the healthy mercurial action, while an opposite plan may be resorted to in patients of a robust temperament—such as a purgative or the warm bath.

It sometimes happens, when you have succeeded in getting rid of the dysenteric symptoms, your patient will nevertheless retrograde in other respects. He may lose flesh, have night sweats, and complain of want of appetite. In such cases, you may with certainty pronounce the existence of abscess in the liver, whether the patient allow

of pain on pressure or not ; or whether or not, upon examination with the hand, you detect enlargement of the viscus. The treatment here is successive blisters, with blue pill, which may be given in combination with sulphate of quinine or aromatic bitters. The patient's diet should be nutritious, and wine or beer should be given according to circumstances.

When dysentery supervenes upon hepatic disease, the treatment, for the most part, must be one of a palliative nature. Leeches may be employed to lessen pain. Blisters and bandages will be also found useful. In this form of dysentery, opium and stimuli may also be beneficially employed.

In patients who have long suffered from dysenteric disease, diarrhœa not unfrequently makes its appearance. This I look upon as the proper disease of the small intestines. Its treatment is troublesome.—Blue pill or calomel in minute doses, Dover's powder, catechu, the chalk mixture, &c. will sometimes palliate symptoms. I have seen benefit from small doses of turpentine and balsam of copaiba ; and I have also found alum and sulphate of copper advantageous. The last re-

quire, however, to be used with caution, as they sometimes aggravate the existing symptoms : Change of climate is often beneficial.

In real scorbutic dysentery, the reader of these pages must be sensible, that, without a change of food, medicine, in many instances, will aggravate all the symptoms of the disease. Mercury, when used in this form of the disorder, ought to be exhibited in very small doses, and its action closely watched. Without a change of diet it must do ill, by aggravating instead of counteracting the existing irritation ; for no metal or mineral can possibly be a substitute for nutrition or pure air, though, when given along with nutritious food, it may alter the diseased action, proceeding, in the first place, from defect of this. Lime juice has been looked upon as specific in sea scurvy. I have my doubts of its efficacy ; but I have none of pure air and change of diet.

A great deal has been said by writers upon this disease, about its being produced by acrid or acid ingesta. That these occasionally give rise to *local* dysentery cannot be denied ; and a common purgative, combined with opium, in such circumstances, if the patient's constitution is otherwise

healthy, will prove a certain cure. Where, however, the constitution is at the same time in a morbid state, the treatment must be conducted on the general principles of cure for the constitutional disease.

ON

HEPATIC DISEASES.

THE frequency of hepatic disorder among the European soldiery in India, depends, for the most part, as much upon moral as upon physical causes. If its origin in many instances can be traced to the influence of climate alone, much more often will it be found to arise from intemperance, either with or without a combination of this cause. The enervating effect of heat is a natural temptation to resort to stimulating potations ; but these, though they give a temporary strength to the constitution, inevitably in the long run aggravate, if they do not produce, almost every disorder incident to it.

The symptoms of simple acute hepatitis can only be mistaken by a tyro ; but in many instances of hepatic disease, few if any of the symptoms by which nosologists characterize it, can be detected by the nicest observation. I have known patients die of abscess of the liver, who never in life had either pain of side or shoulder ; in whose eye or skin not the slightest biliary tinge could be discovered ; and whose pulse, till within a day or two of death, seldom ranged a few beats either above or below the natural standard. Cases of this description are very common among dissipated old soldiers.

The terminations of hepatic disorder are very various. The most common are, enlargement and abscess.

The matter which we find in the liver, on dissection, has no uniform appearance or consistence. Sometimes the organ is studded with small collections of purulent matter, varying in quantity from less than a drachm to a few ounces. In other cases, so extensive is the abscess, that the affected side of the liver is left in the state of a mere shell. The contents may be purulent matter, broken down liver, blood and water, or a confused mixture of all. Sometimes the liver is found

in a state of dropsy. It is occasionally observed to be granular or tuberculated. In most cases of death from visceral disease in India, it betrays greater or less enlargement. I have found it so soft as to break down with the fingers like clotted blood, which it much resembled.

When a patient complains of pain of side or shoulder, increased or not by inspiration, and is unable to lie in a particular position, the nature of his disease is obvious. These symptoms may or may not be attended by febrile disorders. In either case, should the constitution be unbroken by climate or previous disease, the patient ought to be bled to relief of all the symptoms, or to *deliquium*. In some instances, the lancet may be advantageously resorted to a second time. Calomel, in combination with opium and antimony, should be exhibited every second or third hour, and a blister applied to the affected side. In most cases, a purgative may be given before the exhibition of the calomel.

Where the patient's general health has been broken up by habits of intemperance, or previous disease, general depletion ought to be more cautiously resorted to: in many instances the lancet must be abandoned for leeches. The action of

calomel should be closely watched. While I write these pages, a case implying the necessity of caution in this respect, has come before me. An officer, who had suffered in Bengal from acute hepatitis, was, after a long interval of immunity from the disease, attacked with severe pain of side : his tongue, pulse, and skin, performed their functions naturally. Leeches were applied to the side ; a blister succeeded ; and calomel was given in combination with opium, every third hour. The pain, however, was not mitigated, and the patient became worse ; for he was attacked with incessant vomiting, and his stomach could retain nothing. As he was much emaciated, I had fears of abscess ; but suspecting that the calomel might in this instance have some share in producing the irritability of stomach, (so often of itself a symptom of hepatic disease), I ceased to administer it ; and with the best effect,—for the vomiting gradually subsided, the pain of side became less and less, and a seton completed the cure. Ptyalism was not induced in this case. If, instead of ptyalism, ulceration should shew itself in the gums, as we have elsewhere stated, the physician may be certain, that, instead of counteracting existing symptoms, the calomel is actually aggravating the

disease : and of this he may easily satisfy himself, for the patient will manifest an increase of irritability, as well in temper as in other respects. Besides, being unable to sleep, his skin will become dry and hot ; his tongue parched, his pulse small and quick ; and he will complain of much thirst. A glass of brandy and water, with a few drops of laudanum, will sometimes succeed in tranquillizing him. For the same purpose, ammonia and camphor may be beneficially resorted to.

With regard to purgatives in hepatitis, it is good practice to commence with them ; but to go on purging the patient throughout the disease, to remove, in the language of Mr Annesley, *morbid matters*, is only harassing and debilitating the constitution, and often produces a state of irritability incompatible with mercurial action. I have seen purgatives repeatedly administered, to clear away morbid matters produced by previous purgation. I am satisfied that the abuse of purgatives has often caused death in hepatitis, by preventing mercurial action ; and the dysentery which sometimes supervenes during its progress, might in many instances be more fairly attributed to the treatment, than to either the original disease or the constitution of the patient. Surely the influence of

continued purgation must be much more irritating to the bowels than any secretion, however morbid, of the parts themselves. The occasional use of a purgative may be, and often is necessary; but the appearance of the secretions will be more likely to be amended by attending to the general constitutional treatment than by frequent purgatives, which, though they remove, do not prevent them from again appearing.

In the more obscure cases of hepatic disease, the general history of the patient's habits, his former complaints, and the treatment to which he has been subjected for them, will sometimes afford data to conjecture—for it is often a conjecture merely—the nature and situation of the disorder.

I have already adverted to the difference in the appearance of the contents of hepatic abscess observed on dissection. From this dissimilarity I infer, that they cannot all be produced by identical processes. Inflammation is the cause of some; but others, I have no doubt, depend upon derangement or palsy of the assimilating nerves,—those nerves that influence the nutrition and reproduction of the parenchyma of the viscus; and such, I apprehend, are those where little or no pain is complained of. Such abscesses, like the

lumbar abscess, may be the slow production of months, perhaps years; the patient will not even suspect the existence of disease in this situation, and the general constitution does not seem to be aware of its presence, until perhaps it is beyond cure. After a certain period, however, the patient will begin to complain of mal-aise, without being able to refer particularly to any cause of uneasiness. The constitution now begins to take alarm, which it does in a variety of ways. Sometimes by low febrile symptoms, which may appear to be the only disease, and which the usual treatment will often palliate; but these return from time to time, and the constitution is gradually but surely worn out. Sometimes hectic symptoms at once shew themselves, and carry the patient off more speedily. Sometimes the disease terminates in dysentery. In this case the one is aggravated by the other, and death, for the most part, sooner or later puts a period to both disorders. Instances of hepatic disease are not awanting, where constitutional irritation of another kind is the effect of the local disorder; nervous symptoms, such as occasional rigors and spasms, often shew themselves. I have seen life terminated by spasms of the muscles of respiration in hepatic disease.

In every case where disease of the liver is suspected, especially where the general symptoms lend little assistance in its detection, early examination should be made with the hand. In most instances the liver will be felt emerging from the edge of the ribs, to a greater or less extent. In a few cases the more experienced practitioner will discover deep-seated abscess; but the propriety of making an opening for its evacuation, without evidence of its pointing, is very questionable. Few of those for whom the operation has been resorted to recover. The manner in which the abscess points is various,—sometimes externally, sometimes towards the diaphragm; and through this it occasionally makes its way into the lungs, and is coughed up by the patient. I have known cases of this nature where recovery has been the result. Sometimes the abscess points to the stomach or colon; and the evidence of its having burst into either of these viscera, is a quantity of purulent matter evacuated by vomiting or stool. There is also a mitigation of the more urgent symptoms. Recovery sometimes follows.

In the later stage of the disease, where, for example, the patient has night sweats, rigors, or

diarrhoea, I need not say his strength will require to be supported. Beer, wine, or brandy and water, may be exhibited freely; sulphuric or nitric acid will be found useful in checking the night sweats, and diarrhoea may be combated by chalk mixture and the aromatic bitters.

The secretion from the liver in hepatic disease is often perfectly natural throughout; and even the alvine secretions sometimes continue regular till within a day or two of death. Most commonly, however, they are more or less vitiated in appearance.

The condition of the bile is too often looked upon as the cause of many diseases, of which its vitiation, suppression, or superabundance, is merely a feature in common with many others. A French writer* has well observed, that “in our “present ignorance relative to the causes of dis-“eases, we attribute noxious principles to the “bile, which it is probably far from possessing.”

Has an individual been indulging in a long course of intemperance, and complains of bilious vomiting, weakness and tremor, his physician, looking upon the bile as the proximate cause of the other symptoms, prescribes an emetic or pur-

* Majendie.

gative, and tells him he is bilious. This superabundance of bile is a mere coincidence of symptom, depending upon the same cause. It is the effect of a disturbance of the function of the liver, as the tremor and debility are the effects of that of the muscular function. Neither depends upon the other. But an emetic or purgative gives relief, and the bile evacuated is blamed for all. The *modus operandi* of the remedy is misunderstood.—The constitutional counter-irritation which it causes is lost sight of: It is looked upon as a mere evacuant. As an evacuant it certainly does good; for bile of itself, in the stomach, gives a feeling of sickness; but its more beneficial effect is the *fillip*, if I may be allowed to use the word, which it gives to the whole constitution.

I have had to treat some troublesome cases, which might perhaps be appropriately termed rheumatism of the liver. The patient complained of pain of side, which went away and returned at particular times,—sometimes alternating with dysentery, and sometimes complicated with it. The usual methods of treatment gave little or no relief. A change from one station to another, and often from a colder climate to a hotter, was productive of more benefit than any remedies to which I had resorted.

ON

MISCELLANEOUS DISEASE.

By keeping in mind, what we trust we have fully established when treating of diseases more particularly denominated neurotic, that the languor, increase, and cessation of particular functions, all depend upon a diminution of nervous influence, differing however in degree, we shall be able to elucidate many forms of structural or formative disease, which might otherwise be deemed inexplicable. The languid cutaneous ulcer, elephantiasis, and *noli me tangere*, are instances of these three states when the reproductive nerves of the skin are affected. Caries, node, and necrosis, mark similar conditions of the bone. Muscular wasting, enlargement, and gangrene, shew analogous states in the reproductive nerves

of the muscle. That these diseases all receive more or less benefit from mercury, arsenic, quinine, and opium, is an evidence that they are as much entitled to the name of neurotic as tetanus or epilepsy, colic or cholera. Whatever, by rapidly irritating or debilitating the constitution, can produce the latter diseases, will, when acting more slowly, give rise to the whole host of the former. Lead, arsenic, long continued grief, exposure to cold, syphilis, malaria, may be noticed as instances of this. Those remedies, again, which, by their first action, chiefly influence structure and assimilation, give, by long continued use, the whole of the neurotic disorders. Mercury and iodine are examples of this.

Rheumatism, a disease to which the soldier in India is very liable, will be found to have its origin, for the most part, in the following causes :— Inebriety and exposure to the night air: Frequent attacks of visceral disease: Mercury pushed too far for former disorders: Particular local influences. When the patient can trace his disease to either of the first or last mentioned causes, the exhibition of small doses of calomel, or, what I prefer, mercurial fumigation, will very speedily

give relief. This, however, will be only transitory, unless followed up by a course of quinine. When rheumatism is the effect of long continued visceral disease, the employment of the mineral acids, in conjunction with the warm bath, and a generous but not stimulating diet, will be found to palliate, though seldom to cure. The quinine is sometimes useful; so also is sarsaparilla. When the disease is produced by mercury, it is not easily curable. Relief, however, may frequently be obtained even here, under the use of arsenic, quinine, opium, and the woods. The carbonate of iron may be also used with advantage. In all these forms of rheumatism, but more especially when the disease can be traced to some local irritation, such as worms or a gonorrhœa, the various terebinthimates will often be found useful.

Blood-letting, for obvious reasons, is a remedy which seldom ought to be practised for the cure of rheumatism in India, where, for the most part, it is the consequence of visceral disease, or the abuse of mercury. In young plethoric individuals, who have not suffered from climate, a single blood-letting may sometimes be advantageously premised. The disease, however, in

patients of this character, yields very readily to the usual methods of treatment. I have found the cold affusion very advantageous in both acute and chronic rheumatism.

Ophthalmia.—It might seem presumptuous, in a work like the present, to direct the attention of practitioners to ophthalmic disease; but I have seen so much advantage from a mode of treatment of common conjunctival ophthalmia, not yet supposed to be entirely orthodox, that I cannot forbear advocating its more extensive use. I have already said, that mucous surfaces are not readily influenced by blood-letting. This, I think, every practitioner of experience will be disposed to admit. How often do we see a man bled to syncope for common conjunctival ophthalmia, with only the temporary benefit of a few hours' amelioration of the symptoms. These I need scarcely define to be simple redness of the conjunctiva, with a sandy feeling, and stiffness upon moving the lids, the cornea being in the first instance not at all implicated, although, when improperly treated, this tunic also becomes more or less vascular. In several hundred cases, both native and European, I have found the applica-

tion of blue-stone or lunar caustic, in substance, singularly efficacious in the primary treatment. In many cases the disease has yielded to a single application. The blue-stone should be freely and repeatedly rubbed on the everted lid, while one brush of the caustic pencil (should this be selected in preference) will be sufficient. The latter gives greatest relief where there are symptoms of irritability, such as inability to bear the light, or pain on slight pressure: the former will be most useful, where, instead of these symptoms, chemosis or muco-purulent secretion from the lids is present. Even in the case of young children, this remedy will be found much more efficacious in substance than solution. It is a very common error to use cold washes while the patient is under this treatment. I conceive these two modes of practice to be incompatible. A wash of warm or luke-warm water, however, immediately after the application of the remedy, will be beneficial. The application of the dilute citrine ointment to the lids at bed-time, will be found useful in preventing them from being gummed up in the morning, to the annoyance of the patient, and the hindrance of the cure. Where the tongue, skin, and pulse are natural, I

have seldom directed any internal remedies ; when the reverse, an emetic, purgative, or both in combination, have been my usual prescription. With regard to the use of calomel, I have more often, in this form of ophthalmia, found it prejudicial than otherwise ; nor in truth is this to be wondered at, for the disease, in ninety-nine out of a hundred cases, is entirely local. In obstinate cases, a cautious administration of it will sometimes effect a cure.

We occasionally meet with cases, where the patient complains of intense pain in the ball of the eye, the conjunctiva being at the same time more than usually vascular. It will be prudent in this instance to draw blood from the arm, though, after all, the practitioner may find that the disease is neurotic, going off like ague, and again coming on at a particular hour greatly aggravated. Three or four grains of opium will be a useful remedy before the expected accession of the paroxysm, which in many instances it will ameliorate, and in some altogether avert. Sulphate of quinine, or arsenic, given in the interval of immunity, will in almost every instance cure the patient.

How often have I seen patients lose their sight, from a long continuance of depleting measures in

this affection. I remember an old officer, a major, who, having lost one eye by this disease, had the other attacked. I found him leaning his head over a chair, his face indicative of intense agony : For ten nights, he assured me, he had been unable to tolerate any other position, and it was only in the morning, when overcome by agony, that he could at last obtain a transitory sleep. The pain came on at bed-time, in an aggravated degree, and went off only for a short period of the day. Three grains of opium, which I ordered him to take half an hour before the expected paroxysm, procured him a whole night of profound sleep, and his eye in the morning, to his astonishment, was free from pain, and only slightly vascular. He had been repeatedly bled, leeched, and blistered, without even temporary benefit ; indeed the practitioner who had attended him in the first instance, plumed himself on the activity of his treatment.

In deep-seated inflammation of the eye, bleeding, followed up rapidly by calomel and opium, is the best practice. Iritis, for the most part, yields readily to this treatment. In one individual, however, under my care, this disease proceeded to loss of vision, though ptyalism was early induced ; nor was the pain of forehead relieved, either by

this or the belladonna plaster which was applied from the first. Blisters were also used, but without benefit. This man, however, was red-haired; a description of persons who do not always bear mercury well. Shortly before leaving Madras, I successfully performed the operation of making an artificial pupil for an assistant apothecary, in whom the disease was induced by mercury. This remedy was given him for fever; and when the iritis shewed itself, his surgeon, instead of discontinuing calomel, ordered it to be given in larger doses.

Ulcers.—With a few remarks on ulcers, I shall conclude my observations on the diseases of the European soldiery in India.

The constitutional disorders bearing this name, arise from direct or indirect debility. The meaning we attach to these two states, we have already sufficiently explained.

A patient has ulcers in the throat of an unhealthy character. What does it signify whether the cause is syphilitic or otherwise, mercury given judiciously will, in general, effect a cure, because it counter-irritates the existing irritation of the nerves of the part, by whatever caused. It

is the same with ulcers of the skin. In two patients, you have cutaneous ulcers, of a precisely similar appearance. Mercury aggravates, or has no influence upon them in the first, while in the second it effects a cure. Who shall say that the latter has syphilis, and the former not? As well might we call dysentery venereal, when cured by mercury, and non-venereal, where this mineral has aggravated the existing disease. Besides, there are few soldiers who have not had primary ulcers in the *penis*, some time or another. Of a regiment of seven or eight hundred men, at least nine out of ten have had venereal ulcers, without having had secondary disease. When a disease of the throat or skin attacks an individual, then, what right have we to call the disease syphilitic, merely because he has on some former occasion had venereal ulcers? With regard to primary ulcers on the genitals, I have to remark, that there are many which, though produced by coition, are yet not venereal. Let me explain,—A man's skin is morbidly irritable; friction alone in such an individual will be the cause of ulcer. Mercury will very often aggravate this disease. Attention to the state of the stomach and bowels, the local stimulus of lunar caustic, and the use of an occasional warm bath, will soon effect a

cure. The greater number of ulcers of the genitals will yield to rest, a local stimulus, and attention to the bowels. Mercury, however, as in ulcers of other parts, when given with discrimination, will hasten the cure of many, more especially when the constitution is implicated.

I have found arsenic an excellent remedy for many forms of cutaneous disease. Its internal use is better than its external application. Some cases in which this remedy had very great effect, I have noted down : they were the cases of sepoys who had suffered in the Rangoon war from climate, aggravated by depraved or defective food, and the usual privations of soldiers in the field. They were under my care for a fortnight only ; and to that period the treatment refers.

CASE 1.—Jan Khan, havildar. Had tuberculous thickening of the skin of the legs and arms, resembling a partial elephantiasis. His nose was enormously enlarged, and his whole appearance unhealthy. He eat and slept little, and his tongue was foul and clouded. After the operation of an emetic, the liquor arsenicalis was administered in six drops thrice a-day. In about a fortnight afterwards the alteration in his general

appearance was wonderful: The nose has now become nearly of the natural size, and the disease of the skin gradually lessens. He sleeps and eats well, and expresses himself much pleased with the advantage he has already received from his medicine.

CASE 2.—Daud Khan, sepoy. Had pains of the bones and joints, scorbutic patches all over his skin, and an irritable ulcer of the scrotum, from which a fungus, about the size of a chestnut, sprung up. He complained also of a burning sensation in his feet. When I first saw him, he was so weak he could not rise from the floor without assistance, and his countenance indicated wretchedness and debility. Having detached the fungus with a pair of scissors, the lunar caustic was well rubbed in, and the arsenic administered *ut supra*. In a week the amendment of the ulcer was wonderful. The patient has since rapidly gained in strength. The pains of the bones no longer exist, and the eruptions on the skin have gradually disappeared: the ulcer has at the same time closed, and he will soon be fit for his duty.

CASE 3.—Setarrum, sepoy. Had large ulcers of the leg; sloughy, ill-conditioned, and spreading in different directions. He had also cuticular eruptions like the last-mentioned patient; and his appearance and strength, though not so wretched, were yet sufficiently miserable. Pure nitric acid was applied with a feather to the whole surface of the ulcers, and a poultice ordered. The arsenic was given as above. Sloughs having separated on the second day from the ulcers, the leg was supported by Baynton's bandage. The ulcers have since gradually healed, the eruptions have disappeared, and the patient has gained complete health and strength.

CASE 4.—Subryah. Had his leg amputated three times; the last time in the middle of the thigh, but the bone had been left with only a covering of skin. The stump was in an ulcerous state when I first saw him, and the probe, on being passed through one of the ulcers, found the bone carious and denuded, as far as it could reach. The patient's health had suffered, and his appetite was bad; he could not sleep. It was proposed to amputate at the hip joint, as it was not believed any other treatment could do good.

To this step, however, he would not submit. A trial was given to the arsenic; and the ulcers, beyond expectation, have nearly healed. The patient now sleeps well, eats well, and looks strong and healthy.

CASE 5.—Vencatasawmy, sepoy. Had ring-worm of the skin, and an ill-looking ulcer over the sternum, which bone was perfectly carious: the probe could be passed through it to the depth of three inches in the direction of the mediastinum. The patient was weak and irritable, and could neither eat nor sleep; his pulse was rapid and small, and his appearance altogether miserable. The arsenic was resorted to as before: the ringworm has now disappeared, the ulcer looks clean, the probe only passes to the depth of an inch, and the patient's health is rapidly improving.

THE END.

